

AMERICAN VETERINARY REVIEW.

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EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, June 15, 1912.

GERM CARRIERS IN EPIDEMIOLOGY.—Generally speaking, it is believed that the individual affected with transmissible disease constitutes *alone*, as long as the affection lasts, a source of contagion, either directly or indirectly through the objects or media which he has soiled with its morbid products. On this principle our current measures of prophylaxy are based.

Such, Dr. Vaillard, general medical inspector of the Army, has written in the *Revue Scientifique* and he has added: To this traditional notice, another must now be added. Sound, healthy subjects, showing at least all the appearances of health, may hold back in them the virus of an infectious disease, spread it and propagate it unknown to all in the surroundings where they live. Every general system of defensive protection finds in this an unforeseen breach, whose importance must neither be overlooked nor exaggerated.

To those healthy subjects, able to propagate a disease of which they show none of the symptoms, the name of *germ carriers* is today given, a new word whose notion is rather old, as indeed it was already known that the microbe of pneumonia of man can persist for a long time in the mouth of subjects who have recovered and may sometimes remain as virulent for those who have never been affected with that disease. The same can

be said of the microbe or streptococcus of erysepela. And for diphtheria, Roux has demonstrated the frequent survie (?) of the specific bacillus in the mouth and nasal fossæ of convalescent children or of those that have recovered, and again the common presence of the same bacillus, virulent or not, in the throat of healthy children, examined in a healthy center and never having had diphtheria. All those germ carriers were already known, and yet the idea still prevailed generally that pathogenous microbes do not live beyond the disease that they give rise to, although it is not so. Scarlatina patients remain contagious for several weeks after the complete return of health. Typhoids recovered since months and more, may after this time have suppurative lesions due to the typhical bacillus. With malaria, is not very often its recovery only apparent and cannot for a long time its parasite remain asleep in some organ, principally the spleen, to suddenly return with a new infection from mosquitos?

The recent observations of the German school have widened the scope of our knowledge in that direction in showing the relative frequency in healthy subjects of the specific germ of typhoid fever, cerebro-spinal meningitis, cholera, dysenteric and acute poliomyelitis or the disease of Heine-Medin. Veterinary pathologists have also brought forward facts which affirm the interference of these healthy germ carriers in the transmission of some infectious diseases of animals.

These germ carriers do exist and from that a natural consequence prevails, a new and necessary direction in the prophylaxy with the complementary measures that these facts imply.

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The question, continues Dr. Vaillard, may present itself: "How can one become a germ carrier?"

As, after all, the answer applies to animals as well as to human beings, let us look at it as one applicable to a point of view of comparative pathology, as certainly the conditions are alike for both man and beasts.

1. Most often, it is after an attack of an infectious disease, well known or overlooked on account of its abnormal and deceiving aspect, such as is commonly the case with typhoid fever.

The bacillus many times will remain after the clinical recovery from the disease. Many convalescents throw it off *temporarily* for weeks and months with their dejecta or their urine. They are only *temporary* carriers. But in other cases instead of months it is by years that the presence of the bacillus can be detected in an organism. And that may last 10, 15, 20 years. The individuals are *chronic carriers*.

2. Sometimes it is *before the apparent manifestation of the infection*, of which he will become the victim, that a healthy subject may become a germ carrier (*precocious carrier*) and that he contributes to the contagion of a disease which he does not have apparently.

Easy fact to explain, as the introduction of a pathogenous microbe in an organism does not immediately give rise to its morbid effects. An incubation is necessary. But yet, during this silent and varying length of time required for the eclosion of the disease itself, the microbe may still be thrown and give rise to spontaneous contagion. Diphtheria, typhoid fever, cerebro-spinal meningitis, dysentery, cholera, measles, scarlatina have too often been the way they developed.

3. In a third modality, it is no longer patients that have recovered from a previous attack or are in the incubative stage of the disease, but *individuals who have not presented and will not ulteriorly present any of the symptoms of the disease in question, yet throw round them the seeds, germs of the disease*. This fact may seem absurd; it is nevertheless bacteriologically demonstrated and of rational interpretation. These subjects have been *contagionnés* (contaminated), but were not open for the infection; they keep in themselves the pathogenous microbes, but do not become diseased; they are not invaded by them, and as consequence may communicate them to other subjects which, less prepared, become for them a suitable ground. Those subjects form the type of *carriers without germs*.

This is illustrated with cerebro-spinal meningitis. In subjects affected with this disease, the meningococcus is always found in the mucosities of the nose and pharynx. It is there indeed that, for a more or less long time, he develops and grows before he emigrates towards the nervous centers, where it gives rise to meningitis. Therefore, *before, during and even after* the development of the disease, the meningococcus exists in the nasal fossæ and the pharynx of the subject and can be thrown out and grafted upon those surrounding the sick. Talking, coughing, sneezing are the means by which the microbe is disseminated in the surrounding atmosphere with the minute invisible particles of saliva of the sick subject.

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After the consideration of that question, how can one become germ carriers, Dr. Vaillard examines a few diseases on human medicine which deserve special attention relating to the subject, and then from human he passes to veterinary pathology.

The part played by germ carriers has been known in veterinary medicine for a long time, and the facts which have been found are superposable to those existing in human pathology.

First, then, are the *healthy carriers, healthy animals which are bearers of germs susceptible to contaminate their contageners*. For instance, the ovoid bacteria of hemorrhagic septicemia and the microbe of the swine salmonellosis have been observed in the first respiratory and digestive tracts of healthy swine. The existence of the bacillus of the Rouget in the amygdalæ and the intestines of sound pigs is an established fact. Hence is explained the sudden appearance of one of those diseases after the introduction in an establishment, of swine absolutely sound and which most ordinarily remain the *only one free* from disease during the epizooty.

Second: *The animals apparently and even clinically recovered, but yet contagious, (convalescent or cured carriers)*.—Subjects that have recovered from bovine piroplasmosis and spirillosis hide yet the virus for many months and remain contagious.

Typho-anhemia of horses so well studied by Vallée and Carré furnishes also a no less typical example. The animals which resist infection constitute a true reservoir of virus. One of the most active causes of the propagation of this disease is due to the importation of horses considered as cured of this affection.

According to Loeffler the same conditions are applicable to foot and mouth diseases, the part played by recovered animals, but yet virus-carriers, cannot be denied.

The third class is made also of the *carriers of latent lesions*. Such as the subjects affected with pleuro-pneumonia with suques-trum in the lungs, clinically not made out and also those suffering with glanders or tuberculosis, which without ever presenting the slightest symptom of infection, contaminate so many of those with which they come in contact.

What sanitary measure can be applied against the dangers resulting from the presence of these germ carriers? is a question which interests all sanitarians, but which will probably remain almost completely unanswered!

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LAUGHING GAS IN VETERINARY PRACTICE.—This new method considered above for obtaining anesthesia in animals and principally the small ones, brings me to relate another which the *Semaine Vétérinaire* speaks of, in a recent number, viz.: the anesthesia of dogs with laughing gas, which is most interesting among the methods of anesthesia of short duration. Some isolated attempts to obtain that have been made with the chloride of ethyl and the best results have been obtained with those simple operations of daily occurrence in dogs, such as the extraction of a tooth, the enucleation of the eye, etc. It is, no doubt, a method which deserves the attention of every practitioner; it gives to the surgical interference an elegant method of operation which aids in the elimination of some of the old empiricism.

A veterinarian and a dentist in England have had the idea to try in the dog, anesthesia with laughing gas. The trial was hazardous and uncertain; so much so that, as the *Semaine* says:

"Animals under the influence of protoxyde of nitrogen gas may live in it several hours, but the combustion which takes place in the organism is too active, and fatal organic alterations may result from it."

The attempts that were made by Harling Capes and Lewis Green have shown that dogs, like men, are susceptible to the action of the peroxyde, but that with dogs, the great irritability and lively drunkenness observed in man, is not noticed with the dog. The anesthesia takes place rapidly, in one or two minutes, the muscular relaxation is complete and the sensibility sufficiently marked to allow without reaction, on the part of the animal, the extraction of a tooth or a simple operation of short duration.

Rapid in its action, the method can be easily resorted to, specially with the peculiar instrument invented by the English surgeons. The animals recover from the anesthesia in a few moments without difficulty. As for the dangers to run, they seem very little; it is necessary to have the animal inhale the gas for four or five minutes to succumb to it.

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VIRULENCY AND CONTAGIOSITY OF PERSPIRATION IN TUBERCULOSIS.—This very important subject has been the object of a communication made before the Academy of Medicine of Paris relating the observations made by a Dr. Piery of Lyon. Called to care for numerous tuberculous people who, most all, lived with their children in poor quarters, often in only one room, he made two principal observations, one of which at least, is in positive opposition with general classical data: the absence of tuberculous contagion amongst children who were playing on the floor surrounded with the dust of sputa, carrying to their mouth culinary tools and other objects, soiled more or less with Koch's bacilli, and in fact being placed in almost ideal conditions of contamination. And again, by opposition, he observed the frequent contagion between husband and wife, also apparently exposed, but however being still able to take, instinctively or other reason,

prophylactic precautions ignored by the children. What was the cause? Recent researches which had been published on the scepticity of the perspiration of the hands and the sudoral effect upon surgical wounds by the surgeon's hands, Dr. Piery thought to investigate the possible virulency of the perspiration of tuberculous subjects, as being possibly the reason to explain the frequency of the conjugal infection.

From his investigations and experiments he was brought to very important conclusions, amongst which are: that the perspiration (pure and free from any extensive contamination) is virulent and contains the bacillus of tuberculosis. This virulency has been observed in 30 to 76 per cent. (say 4 out of 9 cases) amongst tuberculosis affected with surgical lesions, tuberculous rheumatisms, peritonitis, etc.; in other words, with positively closed or slowly developing lesions.

The perspiration may even oftener, say 41 to 66 per cent. of the cases, be the vehicle of the bacillus of Koch, and then an agent of contagion, either by direct contact or again by an indirect way, such as by soiled cloth.

This contagious power of the perspiration will impose important measures of disinfection which will have to be added to those already known.

The observation of this mode of contagion, new I may say, may not have in veterinary medicine the same importance that it offers in human medicine, and yet deserves our attention.

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TINCTURE OF IODINE AND DIGESTIVE FUNCTIONS.—Since a short time tincture of iodine as a special therapeutic agent has been the subject of much writing in medical and veterinary periodicals. Without recalling again, its great antiseptic properties and the great service that it can render in surgery, whether when it is employed in local applications to disinfect the skin or again in the treatment of wounds of all kinds where it has proved itself one of the best preparations to stimulate the repairing process of tissues and hasten the work of cicatrization, it is evi-

dent that for the present as an external topic it occupies today a first place in external therapeutics.

But besides its numerous indications for external use there are others. When administered internally, it manifests some valuable properties, viz.: as tonic to the digestive apparatus which it regulates in its functions by stimulating the appetite. Of course one must not lose sight of the verdict which is laid against its use by therapeutists. Kaufman tells us that even given in small doses it is not supported easily. The appetite is soon lost, gastro-enteritis sets in, loss of flesh, etc. If it is given it must be with large quantities of mucilaginous or gummy fluids. At any rate its administration must not be of long duration, as manifestations of iodism are to be looked for. "Nevertheless its tonic digestive actions have already been described by a German professor, Dr. Kuss of Strasbourg, and it is to them that Mr. Mollereau called the attention of the Société Centrale in relating the success he obtained in a desperate case.

An animal had a sore neck from peculiar harnessing. It started on the superior border of the neck. Swelling, abscesses, diffused suppuration, necrosis of tissues, spreading of the infection, sloughing of skin and sub-cutaneous tissues leaving an enormous sore extending from the superior third of the shoulder to the lower part of the fore arm in length and from the anterior face of the chest to back of the elbow in width, was the history of the case. As can be surmised, the general condition of the animal was very bad and notwithstanding all the care, the nursing and the varieties of feedings which were offered to him, his appetite finally gave way entirely and fatal termination was in prospect. At that time the work of Dr. Kuss was thought of and tincture of iodine internally was prescribed by Mr. Mollereau. First 10 grammes were given every day and later raised to 20. Under its influence, the digestive functions gradually regained their normal condition and the appetite returned and rapidly improved—which was a great help in carrying on the treatment demanded by the ugly wound of the upper part of the leg.

It may be said that this is but one case. No—Mollereau has

resorted to tincture of iodine since in many instances, as an appetizer, and he has always obtained good results, principally during the convalescence of serious diseases, in animals which suffer from atony of the digestive apparatus, on those also which have had milk diet for a long time, and again in cases of rebellious loss of appetite with unknown cause and which refuse to yield to ordinary medical agents in use.

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TWENTY-SEVENTH ANNUAL REPORT OF THE B. A. I. for the year 1910, published by the U. S. Department of Agriculture, Washington, D. C.

As is usual at about this time of the year, that annual publication has made its appearance, and the work done during the fiscal year by the officers of the Bureau is presented to the Government and to the public as ordered by law.

The volume this year does not differ from those that came before it, same form, same aspect, same printing, same prolific illustrations. The difference is in the contents; yet it is the same, always valuable, interesting and deserving careful and attentive reading to be appreciated.

The 27th report begins by that of the Chief of the Bureau, Dr. A. D. Melvin. It is a general review of all the work done by the various departments of this vast organization, viz.: "the meat inspection, the inspection of animals for export, that of the imported, the eradication of contagious and infectious diseases, their scientific investigations, those on the breeding and feeding of live stock and poultry and the work relating to the dairy industry." This enumeration is sufficient to show the importance of Dr. Melvin's report. The doctor has done ample justice to his task and in the many pages of said report one can at a glance realize that if he has good men under him to carry on the work, he is ever ready to make plain and show the great value of all the results that have been realized by the efforts of all his staff.

Following the report of the Chief a good number of papers

are printed, all of which present individually specific interest. Amongst them some draw principally the attention of veterinarians. The "Army Remount Problem," by George M. Rommel, will be closely studied by our army confrères; "State and Municipal Meat Inspection and Municipal Slaughter Houses," by Dr. A. D. Melvin, will interest the sanitarians; "Vaccination of Cattle Against Tuberculosis," by Drs. E. C. Schroeder, W. E. Cotton, John R. Mohler and Henry J. Washburn, will be read by all and much valuable information will be obtained, and the conclusion will be accepted by many, even if it reads in relation to the subject of the protective inoculation against tuberculosis that though "results have been obtained which are very encouraging to the investigator and which prompt him to strive onward with renewed vigor and hope, no system of bovo-vaccination has reached a stage at the present time that justifies its use in common practice." The *various methods for the diagnosis of glanders* is a communication from Dr. John R. Mohler and Adolph Eichhorn; the *regional lymph glands of food-producing animals*, of great interest to meat inspectors, is by John S. Buckley and Thomas Castor.

As I have said, these reports are to be read by the veterinarians, but they are not the only ones of importance in the 27th report. The "Principles of Breeding and the Origin of Domestic Breeds of Animals," by J. Cossar Ewart, M. D., F. R. S., of Edinburg; the "Ancestry of Domesticated Cattle," by E. W. Mohore, are both of superior interest to zoologists. "The Progress and Prospects of Tick Eradication," by Dr. Cooper Curtis; "The Use of Arsenical Dips in Tick Eradication," by Dr. B. H. Ransom and N. W. Graybill, with its handsome illustrations; and a few others with valuable consideration on their specific subjects, all of them co-operating to the completion of an excellent work which is ended by miscellaneous information concerning the live stock industry.

With its nearly 600 pages of easily-read printing, with 42 plates, of which few are colored, and with 75 text figures and its important and valuable contents, the 27th Annual Report will

no doubt make a good figure among the many similar reproductions of the Bureau of Animal Industry.

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BIBLIOGRAPHIC ITEMS.—*Farmers' Bulletin* 480, from U. S. Department of Agriculture. "Practical Methods of Disinfecting Stables," by George W Pope, D. V. S., of the Bureau of Animal Industry. Also *Bulletin* 145 on "*Trypanosoma Americanum*," a common blood parasite of American cattle, by Howard Crawley, of the Zoological Division, B. A. I. "Agricultural Journal of the Union of South Africa," with an article on contraction in the standing position, by J. J. Edgar, Government Veterinary officer. *Archives des Sciences Biologiques* of St. Petersburg, Vol. XVII., No. I, are here thankfully acknowledged.

A. L.

GREAT A. V. M. A. MEETING AT INDIANAPOLIS— FORECAST BECOMES CRYSTALLIZED FACT.

In our "*Forecast of A. V. M. A. Meeting at Indianapolis*" in the May number of the AMERICAN VETERINARY REVIEW, we gave to our readers in brief an exact outline of the plans of the Indianapolis meeting, and our June number contained a few details, including hotel headquarters, capacity and conveniences of the meeting place, arrangement for clinics, etc. That forecast as then outlined has now well-nigh reached completion, through the untiring efforts of the local arrangements committee, consisting of leading representative veterinarians of twelve Indiana cities, under the able directorship of Chairman Roberts of the host city. This has been a tremendous task, owing to the immense gathering that is anticipated at this central-west city; but the personnel of the committee proves it equal not only to the task of arranging, but of carrying to a successful finish, its most excellent plans. Following is a roster, by glancing at which the character of the work for each day of the convention week may be readily grasped; details, such as names of essayists and subjects of es-

says, were not yet compiled at the date of this writing (July 15), but will be embodied in the official programme, copies of which Secretary Marshall will have in the hands of all members of the association at least a fortnight before the date of the opening of the convention.

	Monday, Aug. 26.	Tuesday, Aug. 27.	Wednesday, Aug. 28.	Thursday, Aug. 29.	Friday, Aug. 30.	Saturday, Aug. 31.
9 to 12 A.M.	Association of Faculties and Examining Boards Claypool Hotel	General Session Auditorium German House	Section Work German House	Section Work German House	Section Work German House	Clinics Indiana Veterinary College
12 to 2 P.M.	Intermission	Intermission	Intermission	Intermission	Intermission	Intermission
2 to 5 P.M.	Association of Faculties and Examining Boards Claypool Hotel	Section Work German House	General Session Auditorium German House	General Session Auditorium German House	General Session Auditorium German House	Clinics Continued
8 to 11 P.M.	Dr. D. E. Salmon Illustrated Lecture Uruguay Claypool Hotel Auditorium	Reception Claypool Hotel General Session Auditorium German House	General Session 8-9.30 Auditorium German House Vaudeville Smoker Gents German House, 9.30-11.00	Annual Banquet German House	General Session Auditorium German House	

A programme of the entertainment arranged for the convenience of guests as well as for their entertainment and amusement while in Indianapolis, is being prepared under the directorship of Chairman W. B. Craig of the entertainment division, a copy of which will be provided each member at the time of registration. All members should arrange to reach Indianapolis on Monday the 26th, as on that evening, as the roster indicates, Dr. D. E. Salmon, former Chief of the Bureau of Animal Industry, at Washington, D. C., and now Director of the Veterinary School, at Montevideo, Uruguay, will deliver his beautifully illustrated stereopticon lecture on Uruguay. President Brenton will open the first session of the forty-ninth annual meeting of the Ameri-

can Veterinary Medical Association at 10.30 a. m., Tuesday, August 27, in the auditorium of Das Deutsch Haus, corner of Michigan and New Jersey streets.

Following the same general plan as last year, the sections will be presided over by the vice-presidents. First Vice-President Moore will preside over the section on "Practice" in Room A, under the direction of Dr. H. D. Gill, New York; Second Vice-President Van Es will preside over the section on "Surgery" in Room B, under the direction of Dr. W. L. Williams, Ithaca, N. Y.; Third Vice-President Jensen will preside over the section on "Sanitary Science and Police," under the direction of Dr. Charles H. Higgins, Ottawa, Canada, in Room C. By looking carefully at the roster for a few minutes you will see that the general plan is, section work in the morning and general session in the afternoon and evening, with but two exceptions. The exceptions are, that on the opening day (Tuesday, August 27) the section work is done in the afternoon, the opening exercises constituting a general session occupying the forenoon; and on Thursday, August 29, the evening general session is replaced by a banquet. We wish to call especial attention to one more thing that the roster will tell you, because of its very great importance, and will then leave you to peruse it at your leisure, and that is the very first notice it contains, away up in the left-hand corner—meeting of "Association of Faculties and Examining Boards, at the Claypool Hotel, Monday, August 26, 9 to 12 a. m." Dr. S. Stewart will preside over this important session, which should be, and no doubt is, of vital interest to a very large percentage of the membership. So far the local committee have taken care of you, but there is at least one thing you have got to do for yourselves, after the committee have furnished a list of the hotels, and that is arrange for your accommodations while in Indianapolis. And in this Chairman Roberts urges prompt action. Our advice is *write immediately* upon receiving this list requesting that reservations be made for you in some one of the following hotels, which are named in order of preference according to desirability of location:

HOTELS AND THEIR RATES.

No. 1, CLAYPOOL (Official Headquarters): Corner Illinois and Washington streets. Can accommodate 500 or 600 visitors. Without bath, \$1.50 to \$2.00; with bath, \$2.50, \$3.00 and \$3.50.

No. 2, DENISON: Pennsylvania and Ohio streets. European plan. Double without bath, \$1.00 and \$1.50; single without bath, \$1.50 and \$2.00; double with bath, \$2.00; single with bath, \$2.50, \$3.00 and \$3.50. American plan: Without bath, \$2.50 to \$4.00; with bath, \$3.50 to \$5.00.

No. 3, EDWARD: 126 S. Illinois street, 150 rooms. Without bath, 1.00; with bath, \$2.00 and \$2.50.

No. 4, ENGLISH: Northwest corner Monument place; 50 rooms, double, without bath, \$1.00; 100 rooms, double without bath, \$1.50; 75 rooms, double with bath, \$2.00.

No. 5, KINGSTON: 31-35 Monument place. European plan. Single, 75 cents to \$1.50; double, 50 cents to \$1.00.

No. 6, GRAND: Corner Maryland and Illinois streets. European plan. Without bath, \$1.00 to \$1.50. Extra for bath, 50 cents to \$1.00.

No. 7, COLONIAL: New York and Illinois streets; 100 rooms. European plan. Single, \$1.00, \$1.50 and \$2.00. The \$1.50 and \$2.00 rooms with bath. Double, 75 cents to \$2.00. Cafe in connection.

No. 8, ALBERT: 126 E. Ohio street; 50 rooms. Single without bath, \$1.00; double without bath, \$1.50; single with bath, \$2.00; double with bath, \$2.50.

No. 9, MAJESTIC: 138 S. Illinois street; 40 rooms; 75 cents to \$1.50. Free shower bath and tub bath on each floor. Eight rooms with private bath.

No. 10, STUBBINS: 153 S. Illinois street; 70 rooms. Without bath, 50 cents to \$1.50; with bath, \$1.50.

No. 11, ONEIDA: 216 S. Illinois street; 150 rooms. European, 75 cents to \$2.00.

No. 12, SPENCER HOUSE: Illinois and Louisiana streets. European plan, \$1.00 and \$1.50; American plan, \$2.50 and \$3.00.

No. 13, IMPERIAL: Corner Capitol avenue and Ohio street; 225 rooms. Double, 50 cents; single, 75 cents. With private bath, \$1.50 and up.

No. 14, LINDEN: 311 N. Illinois street. Will have 100 beds at the disposal of visitors.

Write for your reservations immediately upon receipt of this list, then go ahead with the plans at home for getting away and attending a greater meeting of the AMERICAN VETERINARY MEDICAL ASSOCIATION than history has yet recorded. On to Indianapolis!

SPECIAL CARS FROM NEW YORK TO INDIANAPOLIS.

The added pleasure of journeying to a convention city surrounded by your dearest friends, needs no argument on our part to impress it upon those who have traveled that way. We therefore take great pleasure in announcing to our readers in the New England states, in New Jersey and in New York, that arrangements have been completed with the New York Central Lines to furnish special sleeping cars from New York to Indianapolis, whereby they may travel in all the luxury and comfort that that road knows so well how to provide. It is proposed to leave New York (Grand Central Terminal) Sunday, August 25, 12.40 noon, stopping at One Hundred and Twenty-fifth street 12.51 p. m., Albany 4 p. m., Utica 6.08 p. m., Syracuse 7.27 p. m., arriving at Indianapolis 9.10 a. m. Monday, August 26. A party of ten or more persons will secure a special rate of \$16.25 from New York City, with proportionately low fares from up-state points. The regular fare from New York is \$18.50. The cost of a lower berth from New York is \$5; upper berth, \$4; compartment (accommodating two persons), \$14; drawing room (accommodating two or three persons), \$18.

There is no reason why enough persons cannot signify their intentions early enough to have a special car, or two or more special cars, and enjoy the privacy that goes with that kind of travel.

And if the arrangements proposed do not *entirely* meet the views of all, we are sure that Dr. De Vine, who as resident state secretary has consented to act as chairman of the transportation committee from this point, will have no objection to changes being made in the arrangements to make them conform to the wishes of the majority. Applications for reservations and further information should be addressed to Mr. W. V. Lifsey, General Eastern Passenger Agent, New York Central Lines, 1216 Broadway, New York City. Write Mr. Lifsey at once, and get posted on what you want to know, talk it over with your friends, and then make your reservations as early as possible.

BREEDING QUESTIONS.

Since offering the REVIEW pages for the discussion of breeding problems by the veterinary profession, and expressing our opinion as to the importance of the subject, and our belief that it belonged to the domain of the veterinarian and should of necessity be a part of veterinary education, we have received congratulations and commendation from all over the country, and declarations from some of the leading and progressive members of the profession, of their intention of discussing these problems with their brothers in the veterinary profession, through the medium of the AMERICAN VETERINARY REVIEW. If these declarations become accomplished facts, it will mean that an immense fund of knowledge that is now stored up and inactive will spring into activity, flow from the pens of its possessors and become printed facts that may be read by thousands of the *confreres* of the writer. Each article written will, in addition to imparting valuable knowledge *per se*, stimulate others to read, think and write on the subject, with the result of broadening and increasing the general knowledge of breeding beyond all calculation, a knowledge which cannot fail to attract the attention of the stockman, who, though a practical breeder, has not had the advantages of the scientific training of the veterinarian, versed in the anatomy, physiology, etc., of the reproductive organs, complemented by a

diligent study of the laws of propagation. Recognition by the stockman of the actual possession of knowledge by the veterinarian, superior to his own on matters of breeding, is the only thing that actuates him to seek his counsel, not the mere fact that the veterinarian possesses a degree in veterinary medicine. We have not proceeded quite that far yet in this country, but are working diligently to bring that about. The REVIEW believes that the American veterinarian, through the broadened curriculae of our veterinary schools in the last decade, is much better posted on breeding problems than is generally known; and that in discussing breeding questions together, they will not only receive the benefits already cited as resulting from such discussion, but will attract the attention of the agricultural journals to their interest in and knowledge of such matters, and that it will only be a matter of a few years when a degree in veterinary medicine will inspire in the stockman the same confidence in the qualification of its possessor to advise him how to breed good stock, that he now has in his ability to prescribe for his sick ones; and not until that comes about will the veterinarian have come into his own and have reached his full measure of usefulness in his community.

In our present number Veterinarian Olaf Schwarzkopf, Third Cavalry, U. S. Army, discusses *Breeding Problems and the Army*, in which the doctor reviews the conditions that have led up to the present dearth of army remounts, and opens up a field for discussion on a very important branch of horse breeding. We also quote from a letter just received from a retired veterinarian and extensive breeder of draught horses for thirty years, well known on both sides of the Atlantic, which will furnish food for thought on an entirely different branch of horse breeding. He says, in speaking of the Clydesdales: "To my thinking they have deteriorated of late years, by *in and in breeding*, by selection of males and females with *too light bone*, and by breeding from mares and stallions with markedly *too much white on faces and legs*, and many almost pinta." In another part of his letter he says: "I have been breeding Clydesdales for about thirty years

on a large scale; at one time from 350 selected mares, and found no difficulty about color by careful avoidance of white in excess, nor with bone and stamina by careful selection." In another part of his letter he says: "My agent in Scotland and others complain of the difficulty, yearly increasing, of being able to buy just what I want. I can realize the truth of this by noticing the awards at shows to Clydes with white faces, legs white to the body and splotches of white on sides and thighs. The old saying that 'a good horse is never of a bad color,' may be true in many cases, but I cannot believe that he would not be as good if he was of a good color. I know he is more attractive, should be more salable and bring more money." Continuing, he says: "Another result of *in and in* breeding is that the males are less sure in foal getting, and whether due to the stallions or the mares, foals die more frequently from one ailment or another between birth and weaning time. Few stallions nowadays successfully impregnate more than 50 per cent. of the mares they serve. The result is much loss and disappointment to the owners of mares, and loss of income to the stallion owner. Most deterioration and arrest of improvement, however, arises from ignorance or penuriousness of the average mare owner, who will, in spite of every advice, breed to cheap stallions, ignoring entirely the common laws of successful mating. Such men also fail to realize the importance of liberal feeding of the foal for the first three years of its life." We have taken the liberty of quoting from this gentleman's letter that our readers might have the benefit of the opinions expressed in it at this time, and hope at some future time to have an article from him, at which time his name will be published. The subject of incestuous breeding is certainly an interesting one, and an important one, since its use to a greater or less extent is essential in improving and fixing type. It seems to have been used successfully by Robert Bakewell, of England, the celebrated improver of Leicestershire sheep and Longhorn cattle in the eighteenth century. And from experiments made by Schroeder on guinea pigs some years ago, he demonstrated that, with that animal at least, if you selected absolutely physically perfect in-

dividuals to begin with, no deterioration would result from in and in breeding. It was our good fortune to see the very large number of extraordinarily fine specimens of guinea pigs that Dr. Schroeder had produced from one male and one female in the beginning. Perhaps some one will discuss "in and in" breeding in a future issue, and some one else will explain why the breeders of Clydesdales in Scotland run into white to excess and smallness of bone, when our correspondent on this side of the Atlantic is able to avoid it by careful selection. Do, perhaps, the Scotch breeders fancy that coloring, and in encouraging it, sacrifice what is more important; or is it the result of environment?

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ORIGINAL ARTICLES.

AUTOTHERAPY.*

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Healthy tissues either resist disease, or develop or tend to develop resistance to disease. This is the fundamental principle of health and, consequently, of life.

Reaction to disease is brought about by the action of toxic substances (developed during the course of the disease) on healthy tissues. This is called specific reaction.

Specific reaction is due to the action of specific anti-bodies. Approximate reaction may be developed in the tissues by the action of the products of heterologous micro-organisms on healthy tissues, and also by the action of autogenous micro-organisms (which have undergone a change, as in sterilization by heat, or from being grown in culture media outside of the body tissues, etc.) on healthy tissues. The heterologous micro-organisms and autogenous micro-organisms last referred to are vaccines of lowered therapeutic value.

Specific antibodies are developed in healthy tissues by auto-inoculation, or direct inoculation, which is practically the same thing, that is, by the introduction of the toxic substances developed during the course of the disease in healthy tissues. The process tends to bring about a natural cure.

A natural cure is brought about either by auto-inoculation or direct inoculation.

"Auto-inoculation may be assisted by hyperemia, as heat in fomentations; massage, as in friction; Biers' hyperemic treatment; stimulating lotions locally applied, etc."

* From *Lancet Clinic*, Nov. 4, 1911. Read before the Veterinary Medical Association of New York City, June 5, 1912.

We may assist in bringing about a natural cure, or, in other words, specific antibodies may be developed, by direct inoculation or by placing the autogenous toxic substances, developed during the course of the disease, directly into healthy tissues. This is the auto-therapeutic method of cure. The nascent toxic substances developed during the course of the disease are the substances nature uses in auto-inoculation and also the substances used in auto-therapy. These nascent toxic substances are most potent and curative. Auto-therapy is the therapy that employs all of the autogenous nascent, toxic substances developed during the course of the disease against which the healthy tissues react in a curative manner. The reaction against these toxic substances is the reaction against the disease.

When any of the toxic substances developed during the course of the disease, as the bacterial toxic substance for example, has been changed (as by heat or when grown in culture media outside of the body tissues, or by time) its therapeutic value is lessened in proportion to the change that takes place in it by the various processes which it undergoes.

Sir Almroth E. Wright likens disease to weeds in a garden, and the vaccine to the gardener. At times, the gardener has to weed the garden often before the weeds are all exterminated or destroyed. If a single root is left it may spring up and send out roots, and the gardener will have to go over and re-weed it again.

Restoring normal conditions to the patient always has been and always will be the most important consideration. The patient seldom will refuse to take anything, he can be made to understand will cure him.

The opsonic index is liable to be misleading; the majority of authorities are now guided by the clinical symptoms of the patient as to the time when it is necessary to re-vaccinate. The clinical symptoms are a safe guide as to the time when it is necessary to directly inoculate or to re-auto-inoculate. Each toxic substance acts on the tissues of the body, in a manner peculiar to itself. Its action is different from that of any other toxic substance. To understand the action of the toxic substance of a disease, the disease will have to be studied with this end in view.

But when we find the toxic substances of many diseases act in a curative manner when placed in certain tissues we are tempted to formulate rules for their action and classify them accordingly. It is profitable as a working basis to start in endeavoring to discover how many act in a similar manner and wherein their actions differ.

Rule I. *In extra-alimentary and extra-pulmonary diseases if the toxic product of the disease is placed in the mouth it will tend to develop specific antibodies.* The live pathological micro-organisms may be employed in many diseases.

Rule II. *In intra-alimentary and intra-pulmonary diseases if the toxic product of the disease be placed in healthy tissues outside of these systems, it will tend to develop specific antibodies.* Upon this common ground all schools of medicine can meet. It must be remembered that it is healthy tissues anywhere that develop specific antibodies; it appears, therefore, evident in intra-alimentary and intra-pulmonary diseases that the toxic substances developed during the course of the disease are already pouring into the alimentary canal in massive doses, and if considerable quantities of the crude vaccine and the other toxic substances of tissue change in addition were placed in the canal, it would be not only unbeneficial but harmful.

First, before we can auto-inoculate, we must obtain the toxic substances of the disease; this should be done by every known method. All the excretions and secretions of the body should be investigated with this object in view. For nature tends to throw off or get rid of the toxic substances out of the body. Failing in this, nature often auto-inoculates or allows them to escape into healthy tissues and cures the disease. Each disease should be studied by itself to discover, if possible, which route they take in their elimination, for the purpose of obtaining them for re-auto-inoculating or auto-therapeutic purposes. It is desirable to re-auto-inoculate in many diseases, just how many, clinical experience and careful laboratory investigations alone will tell. The range of application of this principle is very wide and includes the vast majority of infectious diseases.

The writer is developing a new method of obtaining the autogenous micro-organisms in toxic disease where it appears now well nigh impossible to obtain them.

Vaccination as a prophylactic for disease is seldom or never practiced till the disease breaks out somewhere in or near the community, or we know pretty well from where it is coming. Now by vaccinating the patient from this advancing particular epidemic strain of bacteria, we are much more certain to prevent an infection than when we vaccinate from a remote and distantly related strain. We must individualize the disease as nearly as possible if we would obtain the best results, both for prophylactic and curative purposes. Swan claims, I believe, to have immunized other members of a family to scarlet fever by giving them the triturated scales taken from the infected member of the family.

Lux immunized whole flocks of sheep for anthrax by giving each the diluted product of a sheep in the flock that had come down with the disease. He failed to cure other sheep in other flocks with this stock preparation. Had he used the virus of an infected sheep from the second flock for immunizing, and curing each sheep of the second flock with his own virus, his results would have been more successful.

The writer is developing a means of curing sepsis by placing in the mouth the fresh autogenous toxic substances developed during the course of the disease. The therapeutic value of autogenous pus, given in this manner, is greater than the autogenous vaccine prepared from a pure culture of the offending micro-organism by the method now in vogue.

Pus contains all of the toxic products of tissue changes as enzymes, ferments, chemical changes in protoplasmic molecule, etc., against which the tissues rest in a curative manner. It also usually contains the toxic substances derived from the causative bacteria. The toxic contents of pus are the substances that cause a curative reaction in the tissue or a natural cure, when a natural cure is brought about. Nature uses all the contents of pus in auto-inoculation, or in curing the disease, all the contents of pus is what

the writer uses in curing sepsis. Auto-inoculation is auto-therapy. Pus contained, in many instances were examined, the staphylococcus streptococcus and colon bacillus.

There are many diseases that are caused directly by these micro-organisms and many diseases that are complicated by them. When we can obtain these causative micro-organisms in extra-alimentary and extra-pulmonary diseases, we will tend to cure the diseases caused by them (and tend to relieve diseases complicated by them) by placing these live micro-organisms in the mouth. We will discuss some of the extra-alimentary and extra-pulmonary diseases, or diseases caused by these bacteria and, that therefore tend to be cured by placing the toxic product of these three micro-organisms in the mouth (the staphylococcus, streptococcus and colon bacillus).

I. INFECTED WOUNDS.—The writer has cured hundreds of cases of sepsis, and many of the most pronounced cases of sepsis it is the lot of the surgeon to meet, by giving the patient pus from his wound by the mouth. The most remarkable cures he has ever seen have been in curing septic conditions by this method, by giving the patient a drop or two of pus every hour for three hours. The opsonic index was raised when tried in a number of cases.

A weak solution should be given to correct a bad or prolonged negative phase or aggravation in all cases of sepsis. The writer has used the 12th C. successfully. The discharge from a fresh wound placed in the mouth, will tend to abort sepsis. If the wound is clean, it will do no harm. (See also under hydrophobia).

The following is a case of aborted sepsis and is but one of many experiments that could be cited where this was done.

Henry R., 45 years, applied for treatment, January 20, 1911, at the clinic of the Volunteer Hospital. In falling he ran a splinter of wood from a rotten board in the back of his right wrist. It was an inch long and from 1-8 to 3-16 of an inch thick,—half the thickness of a lead pencil. It was decided to perform an experiment in this instance and the writer asked two of the internes, Dr. Dietrich and Dr Kirsch, to witness it. In this ex-

periment practically every known rule of modern aseptic surgery was violated and the best results followed. Nothing was cleansed or sterilized. The instruments used were a scalpel, an artery clip and a pair of tissue forceps. These were taken from a pocket case of one of the assistants and used as they were. The wound was opened with the scalpel, after a futile effort to withdraw the splinter with the artery clip and forceps. It was taken away in small pieces. Time consumed, about ten minutes.

First, the wound was not washed or made sterile. Second, the surgeon's hands were not sterile. Third, the three instruments were not sterile. Fourth, the suture and the needle were not sterile. Fifth, the gauze covering the wound was not sterile. Sixth, the wound was placed in the unsterile mouth.

After the sliver was removed, the patient was told to suck the wound vigorously for ten minutes. Then a very superficial suture of silkworm gut was put in place, but the skin flaps were not drawn tightly. A flap of unsterile gauze was placed over the wound and held with a piece of tape. The tape was tied in a bow knot and the patient was instructed to loosen it and suck the wound every few minutes, especially when he felt any tickling or irritation in it. He was told to return to the hospital at any time if it gave him trouble, but to return at any rate in six days to have the suture removed. He did not return for two weeks and an orderly was sent to look him up. He stated the reason he had not returned was, "there was no necessity for returning; that the wound healed all right." He was told to return and have the suture removed. He said, "that's all right, I took that out with my jack-knife."

The writer does not recommend the auto-septic treatment of wounds to the exclusion of aseptic methods. Asepsis is ideal and should be universally employed where possible, but auto-sepsis offers an additional safeguard that may be used if the surgeon deems it necessary. Placing the discharge of the clean wound in the mouth will do no harm.

The curative effect in sucking the wound is two-fold.

Besides getting the endotoxine of the parent bacteria in the

mouth early, and thereby raising the power of the serum early and increasing the activity of the leucocytes, additional blood is brought to the parts or a hyperemia is established by the act of sucking the wound; the additional healing plasma brought to the parts would in itself be sufficient to cure a mild invasion. The dog, in licking and curing his wounds, does not establish a hyperemia. The soft, velvety tongue cleanses the wound, but by this very act he gives himself a dose of autogenous vaccine. If the dog sustain a punctured wound and it should go on to infection, he will not be able to get the discharge in his mouth till it comes to the surface; then when he licks it, it will go on to healing, for he then gets in his mouth all of the toxic substances developed during the course of the infection, against which the tissues react in a curative manner.

2. ACNE VULGARIS.—Is readily amenable to this treatment. The writer has a record of ten cases of chronic acne vulgaris having been cured by placing the discharge from the lesion in the mouth. Remember the dilution for aggravations.

3. Many forms of skin lesions, and their corresponding internal trouble.

4. Many forms of local skin lesions or diseases.

5. Boils, readily cured.

6. Abscesses, readily cured.

7. Adenitis, when due to many forms of bacteria.

8. Septicemia. The writer has a record of a case of puerperal septicemia that appeared to be cured by placing the patient's own milk in her mouth. Of course, the same element of doubt that always enters into any single case must enter here. Clinical experience alone will determine whether this was a "coincidence of time or a sequence of events."

The vaginal discharge would tend to be more curative, for by giving this we would be more liable to obtain the toxic product of the disease, for this is the route by which nature tends to eliminate the toxic products from the system. At the writer's suggestion, Dr. Freeman cured a case of puerperal septicemia by placing a weak dilution of the lochia in the mouth. The writer

recommends this therapeutic proceeding highly. He has seen good results follow giving pathological discharges from the vagina by the mouth, 3x dilution q. 2. h. for six doses in septic abortion. The auto-therapeutic, (or the AUTOPATHIC) treatment or safeguard in abortions would be to give the patient dilutions from her napkin by the mouth every time it was changed from the very beginning 3x. q. 2. making a fresh supply from each napkin. (See case of aborted sepsis in another paragraph.) Wright, in the Proceedings of the Royal Society of Medicine, gives a case of puerperal septicemia that was complicated with acute nephritis, with blood in the urine. "The vaccine was obtained from the vaginal discharge. It was found to be staphylococcus aureus, and coli organisms. The response was immediate, for the temperature in a few days became normal and she made an uninterrupted recovery." It is only going one step farther, to place a part of the menstrual discharge in the mouth to cure some forms of pelvic disorders.

9. BURNS.—Severe and deep burns may be cleaned from pus by placing the autogenous pus in the mouth.

10. X-RAY DERMATITIS.—Sir Almroth E. Wright says in the Proceedings of the Royal Society: "It may, perhaps, seem to you that only a man who is riding a hobby to death would suggest that a bacterial factor entered into the pathology of X-ray dermatitis. I will confess that it had never occurred to me that this might be the case till I was asked to see an X-ray operator whose hands were in a terrible condition with cracks and ulcers. Cultures here disclosed the fact that we had to deal with an extensive streptococcus infection, and the patient received great benefit from vaccine therapy, the intractable ulcers rapidly healing up. I asked myself, in view of the burning quality of the pain in X-ray dermatitis and of the course that the disease runs, whether a streptococcus might often be an important factor in this complaint."

11. "URINARY CALCULUS.—Dr. Wright says: It is now perfectly well understood that the formation of biliary calculi stands in connection with a coli infection of the biliary ducts and the

gall bladder, and it has been known for very many years that phosphatic calculi form in the urine as the result of changes produced by bacteria. It is only going one single step further to search for a bacterial cause in every case of urinary calculus and to try to identify the bacterial cause, if such should exist. I have not undertaken any systematic observation along these lines, but again, in the course of our daily routine work a certain number of facts, which all point in one direction, have thrust themselves on my attention."

12. "BACTERIURIA.—A medical man who had suffered for years from a bacteriuria, which furnished in every case a pure culture of staphylococcus, developed a real calculus and was operated on. (The question arises, had the staphylococcus been discovered early in his urine"—and given by the mouth, "whether the operation could have been avoided).

Dr. Wright gives three other cases of renal calculus where cultures from the catheter developed staphylococcus. Dr. Wright says:

13. "PRURITUS ANI is again one of those disorders which the ordinary man would not think of referring to bacterial infection. At any rate, it had not occurred to me that it might be due to such an infection till a patient who was suffering from this condition was referred to me for treatment of an associated furunculosis. I now find it difficult to understand how it is possible to look at pruritus ani from any other point of view than that of a bacterial infection. I have had, in observation and treatment, in addition to the case just referred to, three other desperate cases of this infection. In each case I have found that a platinum loop applied to the seat of irritation brought away quite astonishing numbers of microbes invariably staphylococcus, pseudo-diphtheria and occasionally tetragenus, and in each of these cases life has been rendered comfortable, or at any rate quite tolerable by the use of proper vaccines."

The disease that can be relieved by placing the above named micro-organisms in the mouth are those diseases which are complicated by them, as cancer, and some cases of eczema, etc., etc.

It is believed by many that the pain incident to cancer is caused by the action of pus-producing micro-organisms, and we know when these micro-organisms are given by the mouth, in extra-alimentary and extra-pulmonary disease, specific antibodies are developed to them.

Dr. Wright says:

14. "DIABETES.—It must over and over again have suggested itself that diseases which are due to the faulty functioning of some organ, such as Graves' disease and pancreatic diabetes, may ultimately be traced to bacterial infection. Countenance is given to this suggestion by such work as has recently been done in connection with vaccine therapy and diabetes. I may refer to a case of pancreatic diabetes which was treated by my colleague, Captain S. R. Douglas, where the secretion of sugar and the symptoms of the patient were found to vary with the patient's resistance to a coliform bacillus which had been isolated in her feces. I may refer also to the interesting facts which Dr. McWatters is bringing forward in this discussion, in connection with the treatment of glycosuria by staphylococcus vaccine. I think you will see that this fact suggested that glycosuria and carbuncles, which we have always supposed to be related as cause and effect, may, perhaps, in some cases be merely two different manifestations of a staphylococcus infection."

There are many other extra-alimentary and extra-pulmonary diseases that are complicated with the streptococcus and staphylococcus and colon bacillus, but time and space forbid my going further into this discussion. The application of the principal is apparent.

The opinion is fast gaining ground that practically all diseases will eventually be proved to be of bacterial origin, for certain it is the number of diseases not known to be of bacterial origin is lessening gradually as new light is thrown upon them by the many investigators.

There never was a cure of a severe disease without a reaction in the tissues setting in. Reaction is the antithesis to action. A

curative reaction is against the action of toxic substances developed during the course of the disease. *The toxic complex.*

Remember it is the healthy tissues that react to toxic substances. When the poisons of a disease are placed in healthy tissues, the tissues tend to resist the action of the poison, they react it. This reaction is the reaction to the disease.

Healthy tissues are usually able to resist an invasion of pathological micro-organisms, but a lowered vitality coupled with exhaustion or fatigue, lack of proper nourishment, etc., are etiological factors that are recognized as predisposing to a successful invasion of pathological bacteria. Especially are pathological micro-organisms likely to find lodgment in the tissues under these conditions, if there is a point of least resistance in the body. Weak lungs are predisposed to pulmonary infections, etc. The locus minoris resistentiæ, or point of least resistance, about which so much has been recently written, is pretty well understood. The experiments of Baumgarten are well known. He crushed the testicle of healthy rabbits and then injected tubercular bacilli in the jugular vein. The tubercular bacilli were invariable demonstrated in the testicles. It was the point of least resistance and the bacteria were attracted to it.

Rheumatism is a disease of more or less obscure etiology; this has been cured or relieved by heterologous vaccines of some of these three micro-organisms and by reverse reasoning, we might assume that these micro-organisms play a large part in the disease; especially do these micro-organisms appear to be an etiological factor in rheumatism, since "several investigators have found them in the blood of rheumatic patients." (Dr. Ewing, Pathologist, Cornell University Medical College.)

If we could obtain these micro-organisms and give them by the mouth we should tend to cure or relieve the patient. In rheumatic patients, as in some forms of diabetes, etc., and other toxic diseases, let us examine our cases carefully over the whole body for skin lesions or an "external manifestation of the internal trouble," for auto-inoculation purposes. We may in this way cure many diseases, for the skin is a sewer of the body. One of its principal functions is elimination.

When the bacteria are in the blood stream, (as it is claimed bacteria to have been found there in rheumatism,) they develop few antibodies, but when injected hypodermically, they develop more antibodies. Injecting animals with vaccine in the laboratory to increase the power of the serum in developing anti-toxins clearly proves this.

Let us take some localized toxic disease as appendicitis in the interim, or possibly rheumatism. To obtain the fully identified vaccine to abort or cure this disease, we might first reduce the vitality, if advisable, or lower the resistance to disease in any way the physician may deem advisable—the patient's condition would be the best guide as to what method to employ if it is necessary to employ any, for the vitality of the patient may be already lowered. Then make an artificial point of least resistance to which abundant experiments have proven some bacteria will come, we now have a means of obtaining the causative identified bacteria for the purposes of auto-inoculation. The point of least resistance may be made by means of a burn or possibly a blister. The bacteria at this time are temporarily more active on account of the lowered vitality of the patient. The necrotic tissue of a burn will tend to attract the bacteria from their hiding place to it and we shall be able to cure the patient now, for we have the causative micro-organisms, for re-auto-inoculation purposes.

Making an artificial point of least resistance alone may be sufficient in many infectious diseases, in some it may not be applicable. The burn need not be extensive, but it is desirable that it go well through the skin and wide enough to drain. Many authorities believe many forms of nervous diseases, and some forms of insanity are due to toxic substances, and possibly due to bacteria.

It may appear wise, at times, to establish an artificial point of least resistance for an autogenous vaccine, to build up the power of the patient's serum before the operation, as a prophylactic to sepsis. An artificial point of least resistance, from a therapeutic point of view, or to obtain an autogenous vaccine, has never been attempted; and yet there is absolutely no reason why

it should not be done and every reason for so doing. Many authorities whom the writer consulted, believe we should be able to obtain the autogenous vaccine in many diseases where we are now not able to obtain it. The writer asked Dr. Brook, Pathologist of the New York Post-Graduate Medical College, if he thought there was efficacy in this proceeding. His answer was, "undoubtedly."

We will now take up the use of the ice bag and cold compresses in inflammation. Dr. Clive Riviere told us beautifully in the Proceedings of the Royal Society of Medicine, of the value of hyperemia in auto-inoculating the patient in inflammatory conditions, but he said nothing of anemia. By the application of ice packs the parts are blanched, the vessels are constricted at the focus of inflammation, the contents of the smaller vessels are forced into the surrounding healthy tissues and the patient is auto-inoculated. An interval of time must elapse here for the development of specific antibodies. Have we done this? It is apparent we have not. If heat were applied first and then ice, a much more serviceable weapon would be at our command. But here great care should always be exercised that we do not give too large a dose, for it may come at the very time when not desired. The cures made with anemia and hyperemia are auto-therapeutic measures, for they each tend to cure the disease with its own poisons.

The first thought that is bound to occur in considering the important role played by the staphylococcus, streptococcus and colon bacillus in so many diseases is that other diseases caused by other micro-organisms might be cured in the same or a similar way.

15. There can be no doubt that Lux, a veterinarian, a pioneer of this method of treating disease, made a big reputation about 1822 by curing many flocks of sheep and many shepherds of anthrax by giving the autogenous virus by the mouth. But Lux failed to recognize the great importance of the autogenous product, and drifted to using stock solution, or the heterologous product. For this reason he failed, and his system of medication

passed into history till the writer developed the cure and prevention of sepsis by giving the autogenous virus by the mouth, and by so doing placed this system of medication on a firm scientific basis.

It will be remembered that the dose enters only as a secondary consideration; that the condition of the patient determines the amount.

HYDROPHOBIA POSSIBLY PREVENTED AND CURED BY THIS SIMPLE METHOD.

In further substantiating the claim of the writer of being able to abort sepsis by simply placing the fresh wound, or the discharge from the fresh wound, in the mouth, he visited the dog catching station at East 102nd street and East River.

It is believed the bite from any animal is liable to result in an infection or sepsis, and possibly tetanus, and any neglect to thoroughly cleanse or cauterize the bite of any animal invites sepsis.

These dog catchers never have sepsis (if they are to be believed, and the writer knows of no reason to doubt their word as they were frankly interested and apparently honest) and they are bitten frequently. We cannot overlook these common observations; at times we can learn much from them.

Seven professional dog catchers and drivers of the dog wagons were interviewed; they each told the writer that they had been bitten by hundreds of dogs and many times by "mad dogs"; that they do not fear sepsis or hydrophobia or tetanus; that they are conscientious in sucking their wounds immediately upon being bitten by any dog. The result of these interviews can best be given in the words of the men themselves:

WM. H. DILLON (Dog catcher of the City of New York.)

Q. How long have you been catching dogs?

A. 17 years.

Q. Were you ever bitten by a mad dog?

A. (Holds out his hands where the writer counted many

scars, about 20.) Many times. (A fresh wound from dog's teeth made today, not all bites or abrasions from dog's teeth, leave scars.)

Q. How do you know the dogs were mad?

A. In the old Willard Parker Hospital they used to send the dog suspected of rabies with the patient to the hospital. They would send for me then to get the mad dog. They must always send for us when they corner a mad dog or cat on the street, and it is our duty to go and get it; we usually bring it back in a basket or by the wagon.

Q. Do you fear hydrophobia?

A. No.

Q. Why not?

A. Because I always suck the wound as soon as I am bitten. You know we are most always bitten on the hands as we reach for the animal.

Q. Do all the men suck their bites?

A. Yes.

Q. Do you do anything else?

A. I put on peroxide if I have it; if not, I don't bother.

Q. Do your wounds heal quickly? By that I mean do they ever have pus in them or stay sore?

A. No.

Q. How many dogs were brought in to-day?

A. Over a hundred.

Q. Is this an unusually large number?

A. No.

Q. Did you ever see a case of hydrophobia?

A. No, but I would like to.

Q. How many men have worked with you or been connected with the dog-catching business since you began?

A. I don't know; there are about a dozen men working now and they are always changing. In seventeen years I have seen a good many men at the business.

Q. Do they all suck their wounds?

A. Yes.

Q. Do you attribute the fact that you were never infected to sucking the wound?

A. I don't know; I was taught to do that when I went in the business and I've been doing it ever since. We all do.

MR. WM. T. HEFFERN:

Q. How long have you been catching dogs?

A. Between two and three years.

Q. Were you ever bitten by a mad dog?

A. Many times. (His hands had many scars, mute evidence of dog teeth.)

Q. How do you know the dogs were mad?

A. Because when I go after a mad dog it is because he has bitten some one, at times many people. I catch the dog and bring it to the doctors and they say it was mad.

Q. Do you fear hydrophobia?

A. No, I never think of it. Say, Doc, is there such a thing as hydrophobia in human beings? Be honest. We never see it, and we catch mad dogs all during the year.

A. (By the writer). Yes, there most certainly is.

Q. (By the writer) What do you do when a mad dog bites you?

A. I just suck the bite, that's all.

Q. Do all the boys suck their wounds when bitten?

A. Yes, all of us do.

Q. Did any of the boys ever get hydrophobia?

A. Naw, none of us ever gets it.

Q. Why do you suck your wounds?

A. To suck out the poison.

Ralph Husson, City dog catcher two years, offers a prescription for mad dog bites:

R. Just suck the wound and forget it.

M. S. Keep your mind free from thought.

Gus Henslein, dog catcher 17 years, says: "There is no such thing as hydrophobia in human beings. I got a bite once from a mad dog and forgot to suck it. It turned green, then I sucked it and it got well. If I get a bite on the face, I go to the hospital."

and have the wound cauterized. I don't believe there is such a thing as hydrophobia in human beings; it's a man's own idea that drives them into what they term hydrophobia."

Three other men stood around while these four interviews were going on, all agreeing as to their experiences. All had many, many scars on their hands; they all told the same story; they all suck their wounds the first thing when bitten and they say they never have sepsis. (The writer is satisfied this is so, for it completely substantiates the well-known principle of auto-therapy he is developing.)

The virus on the lips and tongue of the dog must infest the side of the wound, and the dog catcher's lips and tongues must come directly in contact with this fresh virus. It is very probable that more of the virus gets into the patient's mouth than in the wound. The writer offers the above testimony as further proof of his method of preventing sepsis.

The writer is informed by the New York Health Department that their statistics show, during the first seven months of 1911, there were one hundred and seventy-three positively diagnosed rabid dogs seen by them in the City of Greater New York. This excludes those taken to the Pasteur Institute, so that the number in New York State must show an even larger percentage, for farmers and people who live in suburbs and villages usually possess a greater number of dogs per family than do the residents of New York City.

The writer's hunting dog was bitten by a mad dog that had previously bitten several cattle. The cattle died of hydrophobia and the dog licked his wound and did not.

Again there is a well authenticated case of hydrophobia in Paterson, N. J., that came under the medical supervision of Dr. Theodore Bender, 127 Hamburg avenue, Paterson, N. J., that has direct bearing on the subject under discussion.

A little girl 8 years old, and her pet dog, were bitten by a dog, July 1, 1911. The father of the little girl immediately sucked her wound; she died of hydrophobia on July 25. The case was diagnosed by Dr. Wheeler, of the Pasteur Institute,

New York City, as hydrophobia; he saw her at ten o'clock on the evening of the 24th, said it was a typical case and she could not live till three o'clock; she died at 5 a. m. Her pet dog was bitten in the mouth, a part of his tongue was torn away; he was bitten also in the flank. He evidently got the virus in his mouth; he also licked his wounds; he did not die, but is well today, August 4. The writer saw him. One-half hour after biting her and her dog, the mad dog bit a horse; the horse died in two weeks,—they did not kill him; he is said to have literally chewed up his stall.

The father said he was sick after sucking the wound, but attributed it to the shock of seeing his only child bitten. The writer saw an account of this in the newspapers and upon investigation obtained the above facts from the parents.

We are led to believe that here is sufficient testimony to warrant further investigation by those best qualified to judge in such matters, and who are afforded the opportunity of studying this simple therapeutic treatment in connection with hydrophobia. And again, we know we get action from hydrophobia, the potentized heterologous virus of hydrophobia when given by the mouth, and believe we would also get action from the low potency or saliva. The virus of hydrophobia is excreted by the salivary glands.

Pasteur found the heterologous virus of hydrophobia tends to be curative, but experience for the past century indicates there is no certainty in cures with any heterologous vaccine unless it is proved and used in a homœopathic manner. Recent investigations by Wright, I believe, indicate that all autogenous vaccines tend to be more curative than stock vaccines.

The writer developed the fact that autogenous vaccination by the mouth in sepsis is more curative than vaccination by the method now in vogue. We see that there is much that points to hydrophobia as a disease that can possibly be prevented and cured by this simple therapeutic measure. We see that after all there appears to be some truth in the old medical saying, "The hair of the dog is good for the bite." The writer is informed that nearly

all undertakers and embalmers suck a wound when injured in working around the cadaver. In the medical school at Philadelphia, we were told by Dr. Weaver to suck any accidental wound we might receive in dissecting, and the writer well remembers Dr. Willard Cottrell, upon receiving a scratch on the ear, went around trying to get some one to suck his ear. Sucking a wound appears to be an almost universal custom and wounds do heal under this treatment, and yet we physicians have never recognized it.*

I would suggest here, as a point of investigation as to whether the universal custom of sucking the snake bite when possible, the efficacy is due (as has been supposed) alone to the sucking out of the poison, or whether the Biers' hyperemic treatment that is usually applied has any effect. Not every person bitten by a poisonous snake dies; not every person is bitten in such a place where he can get it in his mouth. The question as to whether those bitten in the range of the mouth show a larger percentage of recovery than those bitten out of range of the mouth, might prove of great value. It might be said that the action of the snake venom is so rapid there is not time for the development of the specific antibodies. Nature usually compensates and it may be the development of antibodies is also rapid and the Biers' hyperemic treatment that is usually applied may give them an opportunity to develop before the poison gets into the general circulation.

Again, let us remember we get action from the heterologous virus of the rattlesnake, viper and lachesis and hooked adder, where dilutions are given by the mouth and believe in giving a low potency or crude material, we would also get action by the mouth.

I ask myself the question, have I ever aborted tetanus in my minor dispensary cases by putting the wound of the patient in his mouth? The tetanus bacillus, we know, thrives in the alimentary canal of the horse and other animals. Have the dog catch-

* The writer would like to have it distinctly understood, that he offers the above observations on hydrophobia only as clinical observation, and clinical observations are liable to be misleading till they have been abundantly verified.

ers aborted tetanus by the simple method of curing disease the writer is developing? They never have tetanus if they are to be believed and they are bitten all the time by animals.

Can leucorrhea be cured by this method? Leucorrhœa is the external manifestation of many internal disorders. The writer believes he cured one case. It appears reasonable to assume many internal troubles may be cured in the same or similar way. He placed about two drops of mucus in an ounce bottle of water, shook it up well and gave it to the patient to drink. She had a bad headache the next day; on the third day she said she felt well, and had no discharge. What of pyocyaneus, micrococcus catarrhalis, influenza, gonococcus autogens, etc.? The writer has had no extended experience with these, but right here makes an earnest plea for a further extension of the usefulness of the ideas he is developing. It is said by many that in this method of treatment consists the future of medicine where it is applicable.

The writer's experience with auto-therapy is almost wholly clinical. This is the way homœopathy was developed. Clinical experience is the court of last resort in determining questions relative to the therapeutic value of any medicinal preparation. In using auto-therapy, the opsonic index may be used if it is deemed necessary, but the majority of authorities are guided in the administration of vaccines by the clinical symptoms of the patient. "The criticism of this method as crude is unjustifiable for, with a skilled appreciation of the nature of the infection and the response of the individual, the dose can usually be fairly accurately gauged and readily confirmed by experiment."

VACCINATION THROUGH THE SKIN IN INTRA-ALIMENTARY, INTRA-PULMONARY AND OTHER DISEASES.

Having obtained the causative micro-organisms, it becomes our aim to inoculate the patient with their toxic substance, together with the toxic products of tissue changes, through the skin in the manner that will be both safe and curative. We have the identical native bacteria for our purpose. The fresh *nascent* toxic substance of the bacteria grown in the patient's own tissues,

is one of the substances nature employs in auto-inoculation, or when a natural cure is made. This is more curative than vaccines whose therapeutic value have been lessened by heat or by being grown in culture media outside of the body tissues. The different phases of the diseases can be met with the corresponding vaccine more accurately by this method than by the method now in vogue.

The two known methods of inoculation through the skin are by scarification and by hypodermic injection.

Hypodermic injection of dead bacteria by the method now in vogue needs no explanation, as we are all more or less familiar with the proceeding.

*At first glance, it would appear dangerous to inject live bacteria hypodermically, but Dr. Laidlaw appears to have done this successfully in many cases of pneumonia with no ill effect. He withdraws the fluid from the lungs of pneumonia patients and injects it under the skin without removing the point of the needle. He injected two cases for the writer. If I am correctly informed, none of his cases had abscess formations or suffered any ill effect. Both of the writer's cases had crisis—one in six hours and the other in twelve, after the injection on the fourth and fifth day of the disease, respectively. I believe this is the average results he obtained. On practically hopeless case of a man of seventy, injected by the writer, died. The writer believes it would be better to filter the sputum before injecting it in the manner described in a later paragraph. But few of his cases developed micro-organisms when a culture was made from the substance withdrawn from the consolidated lung, and they responded to the treatment. This points to the conclusion that there *are* toxic substances besides those emanating from the bacteria, that are necessary for a cure. Experiments along this line in other diseases show that there are many toxic substances the products of tissue change, present in the focus of infections. In

* The writer does not recommend injecting live bacteria hypodermically now, but there is no telling what further experiments may develop in this direction. We believe healthy tissues at times can take care of a few pathological micro-organisms, and as the toxine of the live bacteria is most potent and curative, it is possible a very few in some diseases may eventually be proved to be beneficial.

clean wounds the products of tissue change are the cause of wound fever. These toxic substances, these products of tissue change, etc., are in pus, and when autogenous pus is placed in the mouth it is these that make it more curative than the vaccine prepared by the method now in vogue. For healthy tissues tend to react and develop antibodies when toxic substances are placed in them whether it be by the mouth or under the skin. In pneumonia, mix one part of the sputum to five parts of water; filter and inject as described elsewhere. The temperature dropped in every case where it was done within six hours. If the temperature should rise again give another dose (20 m. is a dose).

ASCITES. Gilbert, in 1894, says: "In case of pleural or peritoneal effusions, small quantities (1 to 10 C. C.) of the serous fluid are aspirated and the needle is withdrawn as far as the subcutaneous tissue, where the fluid is injected. The usual result is diuresis and rapid absorption of the fluid." No local reaction follows and the fluid disappears in from three to four days. (*London Lancet*, June 3, 1911.)

A case that appears to illustrate the curative action of the toxic products of tissue change when taken by the mouth is as follows:†

June 25th, 1911, †Paschal Romano was admitted to the Volunteer Hospital with a simple fracture of both bones of the left leg just below the knee. A fracture box and cooling lotions were applied, but at the end of three days there was noticed a slight discoloration of the toes. This continued until there was marked gangrene of the foot. On Saturday evening there was a very faint discoloration up to the seat of the fracture. Amputation was refused till the following Monday. When seen on Monday, the discoloration had extended on the under side of the leg and thigh up to the crest of the ileum. Examination disclosed the fact that there were maggots in the foot. He was delirious: temperature 105.

† In reporting a case of this kind the writer hesitates and tries to picture to himself the attitude he would assume at hearing another physician report a similar case. He is frank to say he believes he would be incredulous. But facts are facts and he reports them as he saw them. The internes and nurses of the Volunteer Hospital bear witness of its accuracy.

Cases of this kind seldom or never recover, even though amputation is performed well above the gangrenous area. However, as a last resort, the writer decided to amputate the thigh at the middle third. This was done, but the skin flaps were not sutured together, they were left open and the end of the stump was packed with gauze. The incision passed through about five inches of what appeared to be gangrenous tissue. This was hard and stiff like the back of a book; it was tough and black, and about $\frac{3}{4}$ of an inch thick. The fat globules, where cut, were white and shone like glistening pearls set in an ebony background. The prognosis, of course, was grave.

The writer had no idea of saving the patient's life, but believed he would die as he has seen so many similar cases die. However, about a cubic centimeter of the necrotic tissue from the foot was shaken up well in about four ounces of water. He was given a teaspoonful of this every hour for six hours. His temperature dropped immediately after the operation. The patient went on to an uneventful recovery and the blackened skin flaps did not necrose but returned to their original healthy state and the wound apparently healed with no slough.

Then there remains direct inoculation with the toxic product of the disease by scarification, or placing the crude discharge on a healthy raw surface. It may be claimed this is open to the same objection, that is, the danger of auto-infecting the case. The danger of a superficial infection is not so great as from a punctured wound. This practically is auto-inoculation. It is what the tissues themselves are attempting to do. It is the way nature cures the tissues. This is the remedy the tissues need; it is the remedy the tissues use to cure the condition. It is the substance against which the healthy tissues react in a curative manner and it may be that experience will prove that it is not easy to auto-infect the patient in this way in some diseases. Then, again, a possible reason for not auto-infecting the patient is on account of the lowered vitality of the micro-organisms, especially in chronic cases. The writer does not recommend this therapeutic measure till after a thorough investigation be made of its use.

Auto-therapy is like a two-edged sword. It is doubly useful if handled by intelligence, but great harm may be done in the hands of the ignorant and careless. Auto-therapy is not a cure at all, neither is any other therapy.

No one would think of putting the crude chancroidal virus on a raw surface or give it by the mouth. A skilled appreciation of the nature of the infection should always be the guide in administering autogenous products.

In auto-inoculating, if too great an aggravation should be obtained with the autogenous toxic substance, do not tend to destroy the therapeutic value of the substance by heat, but dilute it or triturate it. Its therapeutic power is raised by dilution; the toxic effect is lessened. Distilled water often may suffice; the patient's own serum is better, as a menstruum, if too much is not required.

There is a way the writer is developing of re-auto-inoculating the patient with the toxic product of micro-organisms and the toxic products of tissue changes that is free from danger of bacterial infection for many alimentary and pulmonary and many extra-alimentary and extra-pulmonary diseases. *This method consists in filtering the discharge of the disease and injecting the filtrate hypodermically.* Alcohol precipitates some bacterial toxins, just how many is not known. It is safe not to use it. If a menstruum is needed to dilute it, use the patient's own blood; possibly water will be sufficient in the majority of infections. If it is necessary to grow a culture of the offending micro-organism use the patient's own blood, oxalated or not as occasion may require. This is the ideal culture medium. The power of the serum is usually low. It is always at hand and the only wonder is that it was never thought of as the ideal culture medium for autogenous vaccines.

The next step in the process is filtering the mixture. This is done through a small porcelain filter, similar to the ones used in all biological laboratories, called a Berkfield filter. Filtration with this filter is the only means of sterilizing the serum of a horse that is used as a tetanus and other antitoxin preparations. Bacteria and spores of many diseases cannot go through this filter,

but the toxic substance in solution will. In filtering solutions containing some kinds of bacteria, too great pressure must not be exerted. The writer has designed an attachment to a filter to meet these conditions. The air pressure on top of the filter is obtained by means of an ordinary atomizer bulb and a column of mercury is arranged to equalize the pressure. When too great air pressure is exerted the air escapes up through the mercury. The mercury really acts as a safety valve in not allowing the pressure to become too great. One drop a minute is not too slow. It is a small Berkfield filter, with a rubber cork in the top, and an atomizer bulb attached to give slight pressure on the top of the solution in the filter. The range of application of this filter is very wide. It is especially applicable to many alimentary and pulmonary diseases and diseases associated with this canal and system, but it also may be used in many extra-alimentary and extra-pulmonary diseases.*

The filtered solution being free from micro-organisms may, as far as infection is concerned, be administered freely hypodermically if the proper care is taken in the filtration. The writer is treating a number of advanced cases of phthisis pulmonaris, he believes successfully, by hypodermically injecting their filtered sputa. They do not know what they are getting, but come back sleeping better, eating better, no evening rise in temperature, no night sweats, they are drowsy as we so often find convalescing tubercular patients. They say they feel fine, their skin clearing up and they feel like going to work. The dose was regulated in each case to suit the individual. There was a sharp local reaction, much redness, over a wide area, pain but no infection. It disappeared in between one or two days. One said, "That medicine makes me feel fine inside," tapping his chest. "I breathe easy." These are all tenement house cases and lack even proper food. They gain in weight from the very start. They have had no other medication. The writer offers this auto-therapeutic proceeding

* The writer wishes to thank the firm of Messrs. Eimer & Amend of New York City for courtesies extended in assisting in getting up the filter.

as of apparently great promise in treating pulmonary phthisis. Koch made the same mistakes Lux did. He used the stock preparations or heterologous product. Experience for the past century indicates there is no certainty of cure with the heterologous product. The greatest care must be exercised in administering the autogenous tubercular toxine for it is a weapon that is capable of doing a great deal of harm in the hands of the careless or ignorant, but on the other hand it is capable of doing much good by its skilled administration. A keen appreciation of the nature of the infection and the response of the individual and the stage of the disease are the determining factors that must enter into its successful administration. The present indications are that this new therapeutic proceeding shows great promise. No one is interested in what the writer or any one else believes. What the profession wants is facts or proof. On the other hand, when we review our present knowledge of the tubercular toxin, and what we know of auto-inoculation and consider the great improvement of these cases, we see that there is much that points to the conclusion that by the writer's simple therapeutic proceeding, pulmonary phthisis has been met squarely on its own ground. The results are most encouraging. It may be advisable in some cases of clinical tuberculosis to aspirate the infected area to obtain the toxic products of the disease for direct inoculating purposes.

The writer was called at 12 p. m. to attend a case of bloody dysentery. At least, he diagnosed it as such. A girl of 17 years had been complaining for twenty-four hours. When seen her temperature was 104 degrees, face red, no water or food was retained, constant purging. Stool like thin rice water and some blood. The writer took an ounce of her stool, filtered it, and at 1 a. m. injected about ten drops hypodermically. During the night a well-meaning friend gave her some cholera mixture and spoiled my demonstration. However, at 9 a. m. her temperature was 99. She made an uneventful recovery. The writer does not give this as a cure, but to illustrate the possible uses of auto-therapy. He believes it was the filtrate that cured this case.

There being no foreign proteid injected, anaphylaxis would be an impossibility by this method.

This may be a bedside proceeding and has an extensive range of application in infectious diseases. The writer suggests that experiments be made in treating typhoid and cholera and other diseases where the toxins are excreted in the feces by administering the filtered stool hypodermically.

The filtrate may be employed as an immunizing agent, to others who have been exposed to the disease.

CONCLUSION.

There never was a cure of bad infection that was not due to a reaction setting in the tissues. Reaction is the antithesis of action. The action of toxic substances that are developed during the course of the diseases tends to cause a curative reaction when they escape or are placed in healthy tissues. Remember, it is healthy tissues of any kind that react against toxic substances.

If we place the toxic substances that are developed during the course of the disease in healthy tissues, resistance to them will tend to be developed. The reaction and antibodies to these toxic substances in healthy tissues is the reaction and antibodies of the disease. Hence the tissues tend to react to the disease by reacting to these toxic substances.

Auto-inoculation employs all of the toxic substances developed during the course of the disease. This includes the toxic products of the bacteria and also all the toxic products of tissue changes against which the tissues react in a curative manner.

Auto-therapy employs all of the autogenous toxic substances developed during the course of the disease (the same as auto-inoculation), against which the tissues react in a curative manner. Auto-inoculation and auto-therapy both employ the same identical toxic substances in performing a cure. Auto-inoculation is the means nature employs in performing a natural cure. Auto-therapy is the means the physician employs in assisting nature in performing a natural cure, both being natural cures. They both employ first the unchanged toxins from the fully identified micro-

organisms, i. e., the organism that is fully identified with both the disease and the patient. No other therapy does this. Second, they both employ all the toxic products of tissue change, as enzymes, ferments, chemical changes in protoplasmic molecules, etc., etc. The tissues react against these in a curative manner. No other therapy does this.

Auto-therapy or autopathy is natural therapy, or, as the name implies, self-therapy. Auto-therapy employs nature's weapons in combatting disease; we cannot go behind it.

Now that the way is opened, other methods of safely administering the toxic products of disease may be developed. The development of several ways to safely place all of the toxic substances developed during the course of the disease, in healthy tissues is given in the text of this thesis. Any method or system of medication that employs all of the autogenous toxic substance developed during the course of the disease to cure the disease comes under auto-therapy. Auto-therapy cures disease with its own poisons, not with the altered bacterial poison alone, but with all of the toxic substances developed during the course of the disease against which the tissues rest in a curative manner.

There may be other methods developed for preparing the bacteria or preparing the enzymes, ferments, etc., but the vaccine to be most curative must be used in connection with these toxic products of tissue change, in localized and loosely localized and possibly non-localized diseases.

By using nature's weapons we but assist in arousing the natural forces within the body; they alone can bring about a perfect cure.

Auto-therapy is the link that joins isopathy and opsonotherapy.

Auto-therapy has a distinct advantage over even natural therapy. By auto-therapy the powerful secondary defenses of the tissues the antibodies are brought into play earlier than by the slower natural process. The patient is not so reduced by the fever, or taxed with the poisons of the disease. By placing the poisons of the disease in healthy tissues early and not waiting for

nature to do so, we are able at times to cut short or abort the disease.

Auto-therapy is the keystone in the arch of the great medical superstructure that has been raised by both dominant schools of medicine. As the keystone fills out the arch, joining the two leaning sides, so auto-therapy joins the two great schools of medicine by strengthening and beautifying each, for this is nature's method of curing disease.

The writer is indebted to a number of his confreres and co-workers for able and friendly criticism of this paper, for he wishes here to express his thanks and appreciation for the time consumed and interest manifested in the work he is developing:

Dr. Brooks, Pathologist, New York Post Graduate Medical College.

Dr. George F. Laidlaw, Professor of Diagnosis and Internal Medicine.

Professor Wm. H. Freeman.

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PRESIDENT "TOM" SMITH of the Veterinary Medical Association of New Jersey proved an ideal presiding officer at the recent meeting of that organization.

THIS ITEM IS SENT WITH THE COMPLIMENTS OF IOWA STATE COLLEGE: "There isn't even a nail missing in the description of the three poultry houses given in a bulletin, No 132, *Farm Poultry Houses*, just issued by the Iowa Agricultural Experiment Station at Ames.

"Every detail and every step of construction is made clear by photographs, showing the exterior and interior alike, and by builder's drawings, showing the method of construction throughout, and by bills of materials that include every item needed.

"Three types of houses are described, two movable and one stationary. The 'A' shaped movable house may be built at a cost of \$39. The 'Iowa Colony House,' used first at the Iowa poultry farm at the station, costs about \$58. The stationary house is larger than either and may be built for about \$173 or \$180, depending on whether lumber and concrete or hollow tile and concrete are used.

"The Iowa Agricultural Experiment Station will send these bulletins on request."

TUBERCULO-INFECTION OF MAN THROUGH ANIMALS AND ANIMAL PRODUCTS.*

By A. O. ZWICK, PH.G., M.D., CINCINNATI.

Tuberculo-infection of man through animals and animal products is essentially food transmission. At least I shall so take the subject which your president has done me the honor of proposing for my discussion. It is milk, cream, butter, cheese and meat, then, derived from tuberculous cattle that we must discuss, together with their effect upon the human economy when consumed, as they abundantly are, as articles of food.

At the Veterinary Congress in Cassell, in 1903, Von Behring stated that the development of tuberculosis is *always* the result of infection in childhood, which in the great majority of cases is caused by the ingestion of milk from tuberculous cows. We now know that this view is much too sweeping, and finds contradiction in a mass of clinical and experimental data since accumulated bearing on this point.

It is, indeed, as untenable as the opposite view, advanced by Robert Koch: "That tubercle bacilli of bovine origin are entirely *innocuous* to man." Since the astounding communications of these two men, the many, many investigations that have been carried on in various countries have abundantly proven that the human animal, particularly during early childhood, is capable of contracting bovine tuberculosis through the digestive tract, and probably through the tonsils. In J. B. Murphy's laboratory I examined numerous tonsils, removed on account of disease, and found over 50 per cent. of them to be tuberculous. In fact, at every period of his existence man, particularly on manifold, repeated or continuous exposure, is subject to tubercular infection, and the most important factor in the spread of tuberculosis is

* Reprinted from Year Book, 1912-13, Ohio State Veterinary Medical Association. Read before said Association at Columbus, January, 1912.

undoubtedly the transmission of the germ itself, recently escaped or expelled from a tuberculous organism, human or bovine.

Now as to these early cases of tuberculosis, acquired in childhood, latent though they be, there are two points of extreme importance to be considered. The first is the fact that such cases, up to a certain point, heal apparently easily; at least they readily become dormant, do not progress, are latent. But, and this is the second point, these individuals are extremely liable to a subsequent reinfection. There exists, as it were, a state of anaphylaxis—that is to say, literally, from *and*, off, and *phylax*, guard, a condition of being off-guard, then—occurring through a gradually becoming accustomed, acclimated, as it were, to the invasion, the encroach of a surreptitiously approaching, stealthy enemy lying in ambush, already on one's own ground, ready to spring out and make an overwhelming attack upon the unsuspecting, unprepared, surprised organism. This state of affairs reveals itself either by excessive reaction to tuberculin, or by the prompt severity of the symptoms displayed on exposure to renewed infection, even though the latter occur in adult life, while the early attack took place in childhood or infancy.

Hence here again the importance of combating, nay more, of heading off these early attacks, which in the great majority of cases are of gastro-intestinal origin through the ingestion of cow's milk.

Now you have the argument put up to you *net*: Most eminent authorities on both sides of the question advancing views diametrically opposed to each other!

Whose views are we to accept? *Neither!*

It is not a question of accepting views, nor of authority, nor of dogmatic assertion; it is a problem to be decided on its merits; it is matter for investigation and research, of close study of anatomical relations, of the direction of the lymph-stream, of the blood-current, to determine the routes of infection within the body. As a result of their investigations along these lines, Schroeder and Cotton, in a recent bulletin (1908-1909) of the Bureau of Animal Industry, conclude: "That the assertion that

tuberculosis is a negligible quantity in the measures that must be taken for the preservation of human health, is without basis in fact, and that there is no more active agent than the tuberculous cow for the increase of tuberculosis among animals, and its *persistence among men.*"

On the other hand, *a priori*, the comparative rarity of primary intestinal tuberculosis, on which point there is, however, a discrepancy of statistics, apparently does not favor the idea of tubercular infection by ingestion of food.

But even though as stated by Koch, pulmonary consumption constitutes eleven-twelfths, and all other forms of tuberculosis but one-twelfth of all cases of tuberculosis, there is nothing so conclusive about such statistics as may at first sight seem to be the case. The question as to the primary site of infection, the port of entry, still remains open, debatable ground!

It has been proven, as already mentioned, that tubercular-aero-infection probably may well take place, in fact, undoubtedly does take place through the tonsils. I have spoken of my own experience while conducting the laboratory work for J. B. Murphy's surgical clinic in Chicago some years ago. Again, Latham, a competent observer, considers that not less than 25 to 35 per cent. of the cases of tuberculosis which occur in early childhood are due to intestinal, and therefore presumably, to food infection. Now that the origin of tubercular infection of the lungs may well take place in the tonsils is admitted by all. They are known atria of infection for various constitutional diseases. The transmission of the tubercle germ from the tonsil through the chain of lymphatics in the neck down into the lung has been abundantly demonstrated. Why then should not transmission of the tubercle germ through the body lymphatics be equally possible, and being possible, as I shall show you, equally plausible as a probable source of infection with tonsillar infection, nay more. Remembering the constant and regular consumption of such articles of diet, usually unsuspected of contamination and therefore commonly long derived from a given same source, infected yet unsuspected though this source may be, why should not food-infec-

tion play at least an equally important role with air-infection, digestion and ingestion methods of infection with inhalation, gastric and intestinal with respiratory, pulmonary ways of infection?

Before I am through I believe I shall have, from the close study of this subject which I shall present to you here to-day, convinced you that in all probability the gastro-intestinal tract is by far the more important route of tuberculo-infection, far more important than the respiratory, in fact by far the most important route of all! In other words, gentlemen, and that is exactly what I propose to do, I shall have laid the burden of the protection of the public, of the human race, against a further spread of the great white plague, this scourge of humanity, where I believe it belongs, that is to say: At your door!

It is true that when comparing the tonsillary entrance with the intestinal we must admit that we frequently, I purposely say and emphasize *frequently*, find the tonsil diseased, not always; while in a large proportion of the cases of pulmonary tuberculosis which I shall contend are due to the consumption of tubercular food, I have to admit that we frequently find the intestines apparently free of foci of the disease. This seeming discrepancy is easily disposed of, however, by the now well-established fact that tubercle bacilli may pass through an uninjured, perfectly sound and whole mucous membrane without causing any localized lesion or even leaving any traces behind them at their point of entrance! This is a fundamental fact that militates with irresistible force against Koch's strongest argument: The overwhelming preponderance of pulmonary tuberculosis as compared with all other forms of tuberculosis, being as eleven-twelfths to one-twelfth.

Dr. Karl H. von Klien, now of Chicago, formerly surgeon in the Russian army, who was present at the International Congress in London when Koch declared that tuberculosis cannot be transmitted from animal to man, tells me that all his friends tried to persuade him not to read his paper, but with stubbornness he insisted on presenting it just the same, and, as Dr. von Klien says, "that started the ball rolling, and it has been rolling against him ever since!"

In 1908 Koch was "of the same opinion still." I was myself present at the sixth International Congress against Tuberculosis in Washington, D. C., during the discussions of the special committee appointed to consider this matter. I have had the honor of reading a paper on this famous conference before the Ohio Society for Comparative Medicine at their meeting in Cincinnati, and have with me for distribution after this lecture an abstract of these historic deliberations, taken from the records of the Congress. Koch therein still maintains his original position—again with stubbornness and against the arguments of his friends who in vain begged him to yield. The grounds for his insistence on his views, together with a description of his ingenious reasoning, are laid down in my pamphlet on the subject.

Close investigation and study, however, reveals that his position is untenable. If we believe with von Behring that food transmission is an important path of invasion of the human organism by the tubercle bacillus, in spite of the fact that the integrity of the intestinal mucosa in a large majority of the cases is preserved, then it behooves us to show the possibility, nay the probability, of such a course of infection by studying the physiological mechanism by which the blood and lymph, including chyle, the circulating media of the body, perform their functions, for it is through them alone that such transmission of the germ of tuberculosis from the intestinal port of entry, which we are presupposing, could take place.

I believe we shall find that this route through the stomach is quite as direct as the one through the lungs—if not more so. But, at this point, some one might object: "Is not the gastric juice a good agent of disinfection, of destruction of the tubercle bacilli?" I will ask in return: "Does it always then, with dependable uniformity and regularity, destroy the germs of typhoid fever?" We know that it does not!

As Wladimiroff, in his beautiful lecture on the "Biology of the Tubercle Bacillus," delivered in Washington before the Anti-Tuberculosis Congress in 1908, well says: "The old-time belief that the gastric juice destroyed the bacilli in the stomach is very

much weakened by more recent observations and experiments. Sometimes, and, unhappily rather often, the bacillus will pass safely through the intestine after traversing the stomach, and the secretory, or rather the digestive, better even the absorptive functions of the intestine are favorable to the bacillus. And thus it is that once arrived in the intestine, the bacillus has but to follow the ordinary route traversed by the nutritive body juices, the chyle, the lymph, the blood, to enter your heart's blood, with this the lung, where the blood-current growing slower, there are conditions presented that are quite favorable for the bacillus to become localized, and to develop."

As regards the supposed protection of the individual against tubercular invasion by the gastric juices, I believe that the latter offer far less protection against the tubercle bacillus than against the germ of typhoid fever, and yet all will readily agree that the latter must quite evidently succeed in safely traversing the stomach and reaching the intestine, where it localizes and produces its characteristic lesions.

My ground for this belief is the special manner in which the tubercular invasion by the gastric juices, I believe that the latter in microscopy to make this germ visible. Indeed it was by the discovery of these and correlated facts that Koch was enabled to again in turn discover this microbe, just as his work with these same dyestuffs led Ehrlich at the end, as the final outcome of his many brilliant successes, to the discovery of "606," that most successful example of the new, truly scientific, art of healing, chemotherapy.

That the various bacilli can be made visible by staining with the anilin dyes is, of course, well known to all; and that the bacillus tuberculosis behaves in a special way towards the dyes is, of course, also a familiar fact, viz., not only that we must use mordants in order to stain it, but it is absolutely a distinguishing mark or characteristic of this germ, that once stained it retains such stain even in the presence of acids. It is acid-fast.

But do we keep this fact sufficiently in mind as an explanation of its murderous power? In other words, if this germ will resist

the effect of 15 per cent. to 33 per cent. nitric acid and strong alcohol, what chance have the gastric and intestinal juices in dealing with it? I believe the destructive power of the gastric juice in the face of such a murderous germ as this to be a myth, pure and simple. To further bring out this point, I will dwell but a moment on the peculiar chemical constitution of the germ, as it may, in fact probably does, explain its invulnerability to acids. I allude to the fact that this bacillus is composed not only of albumin, "the life substance" which our organism could easily handle and do away with, but that throughout the whole of its mass and covering its exterior like a coat-of-mail or like a battleship's armor there exists a combination of several of the substances classed by chemists as fats or waxes! And these fats or waxes not only are evidenced chemically by this acid-fast coloration but have other biological significances of the utmost importance to the tubercle germ and—unfortunately, to us. Not only does it form a defensive and protective membrane to the little germ but it penetrates, like a skeleton perhaps, the interior of its organism, and forms in fact, or makes of it rather, as Wladimiroff, whom I have already quoted, says, a spongy, waxlike carcass, resisting not only external influences, especially drying, but also the penetrating efforts of the gastric juices and again the devouring defenders of the animal organism, the phagocytes; these can take up the tubercle germs within their body, but, in all probability on account of the waxlike envelope and skeletal structure, evidently cannot resorb and digest them—they try in vain to destroy these microbes like they successfully do practically all others. And it is again this precious wax that protects these bacilli against rapid drying, which would be fatal to their vital albumin. Indeed, the resistance in this respect, the resistance to drying, the microbe of tuberculosis is immeasurably greater than all other germs (Wladimiroff). And again, though it does not form spores, thanks to its waxlike coat of armor the tubercle germ has no need of doing so. Some observers think they have discovered spores, but there is still some doubt on that score. Wladimiroff, of St. Petersburg, whom I have repeatedly quoted,

says on this: "The tubercle bacilli do not offer the resistance to physical and chemical agencies, especially not to high temperatures that is characteristic of true spore-forming microbes.

One other fact concerning the tubercle bacillus, and then we will take up the transmission of the germ by the circulating liquids of the body from a given point of entry, here the intestinal canal, to the point of attack, the lung frequently enough, showing that the former is easily possible, and the latter, as a consequence, probable.

The bacillus tuberculosis is not able to multiply except in the interior of a living organism, for two reasons: In the first place it cannot grow except, or rather grows best, at the body temperature, the temperature of the blood; and in the second place it cannot elsewhere, except in the laboratory, find the suitable culture media for its successful propagation. From this it results that the tubercle bacillus is an obligatory parasite which cannot thrive outside the animal economy, a fact of capital importance in the warfare against tuberculosis. That the apparently differing types of the tubercle organism—the avian, the mammalian, including the varieties of the bovine and the human, etc.—are merely adaptation forms to the different animal organisms with which the germ has to deal, I need not dwell on here, except to mention that this is merely added evidence of the extreme viability and adaptability of this germ to changing surrounding conditions of media, temperature, species of animal (host) and other vital requirements for its continued propagation and existence, the dangers to the human race being increased by just so much as the germ is capable of thus adapting itself to its environment. It is a matter of fact, even, that the germs derived from many different patients, human beings, are not always identical, varying in tenacity and resistance, and in degrees of virulence towards laboratory animals.

Physiological Considerations.—The body fluids are the chyle, the lymph and the blood. The chyle is merely the name given to the lymph coming from the alimentary canal; it is lymph to which has been added some of the absorbed products of digestion. They

are chiefly particles of fatty matter or minute oil globules, some of which are of appreciable size; the greater number, however, are immeasurably small. Like the fatty globules suspended in milk, they give the chyle a similar "milky" aspect; otherwise it is identical with lymph. Therefore we can, with Stewart, describe the circulation of the food-substances in the economy of the higher animals in one phase by saying, *the blood feeds the lymph and the lymph feeds the cell*, since no blood-vessel is believed to enter a cell. The blood contains at one time and another everything that is about to become a part of the tissues, as well as everything that has ceased to belong to them.

Whether the leucocytes play any part in the normal nutrition of the other cells is not certainly known, but they have another important function which it is necessary to refer to here.

Phagocytosis.—The phagocytes, *i. e.*, cell-eaters, are certain ameboid cells of the blood and lymph which are able to include or "eat up," devour or absorb foreign bodies with which they come in contact, in the same way as the ameba takes in its food. The behavior of these phagocytes towards pathogenic micro-organisms, is to us here, now, of greatest interest and importance. We owe our knowledge on this subject to Metchnikoff, who showed by his researches on daphnia, a small crustacean with transparent tissues observable under the microscope, that when daphnia is fed with the spores of a fungus, the monospora, these spores find their way into the body cavity of daphnia, where they are at once met, attacked, ingested and destroyed by the leucocytes. But—and note this—after a while so many spores get through that the leucocytes cannot handle them, at least are not able to deal with them all; some of them develop into the first or conidium stage of the fungus, and the conidia, instead of being destroyed by them, kill the leucocytes, and generally the animal dies. Occasionally, however, the leucocytes are able to destroy all the spores, and the life of the daphnia is preserved. This battle, ending sometimes in victory, sometimes in defeat, is believed by Metchnikoff to be typical of the struggle which the phagocytes of the higher animals, including man, engage in when germs of disease are introduced into the organism.

Diapedesis.—Waller and Cohnheim have demonstrated it to be a fact that leucocytes can pass out of the vessels into the tissues, and this fact has a very important bearing on the phenomenon of phagocytosis just described. It can be observed by irritating the mesentery of a frog, when of course, all phenomena of inflammation follow, the first effect being an increase in the flow of blood through the affected region. If the irritation has been severe enough, or continues long enough, the current slackens, the corpuscles stagnate in the vessels, and inflammatory stasis is produced. The leucocytes adhere in large numbers to the walls of the capillaries, particularly the small veins, and then begin to pass slowly through them by ameboid movements, the passage taking place in the junction between, or it may be right through, the substance of the endothelial cells. And if these leucocytes happen to be loaded with tubercle bacilli, which for reasons given, they have been unable to digest, these bacilli have been implanted in the, to them, ideal culture-medium, the tissues of a living animal body.

It is then plain: the absorbents, or lymphatics, gather the bacilli with the food material from the alimentary canal and transfer them to the different parts of the body, also pouring them out into the blood stream, and thus causing further dissemination. That such passage of the leucocytes can take place without the phenomena of severe local inflammation occurring, is undoubted; that it would most readily occur where the blood current is slow and the capillary network fine-meshed and intricate, is self-evident.

The comparative slowness of the current and the disappearance of the pulse are the chief characteristics of the capillary circulation. The explanation is readily found in the great resistance offered by the narrow and much-branched vessels; the wider the bed, the shallower the stream, the slower the current. As Stewart says: "The rivers of the blood are, even at their fastest, no more rapid than the sluggish stream. The mean velocity of a particle of blood in moving from the heart to the femoral artery does not, according to even the most liberal calcula-

tions, exceed 150 mm. per second for the whole of its path. This would correspond to rather more than one-third of a mile per hour. In the arch of the aorta the average speed may be twice as great. Yet a red corpuscle, even if it continued to move with the velocity with which it set out through the aorta, would only cover about fifteen miles in twenty-four hours, and would require five years to go around the world." (Stewart's Manual of Physiology.) Although the average diameter of a capillary is only about 10 μ (5 to 20 μ in different parts of the body), the number of branches is so prodigious that the total cross section of the systemic capillary tract has been estimated at 500 to 700 times that of the aorta. The total cross-section of the vascular channel gradually widens as it passes away from the left ventricle. In the capillary region it undergoes a great and sudden increase. At the venous end of this region the cross-section is, however, again somewhat abruptly contracted, and then gradually lessens as the right side of the heart is approached; but the united sectional area of the large thoracic veins is greater than that of the aorta. (Stewart, page 105.) In man, Stewart adds, the pulmonary circulation-time is probably usually not much less than twelve seconds nor much more than fifteen seconds—a comparatively long time. (Stewart, page 111.)

Anatomical Considerations.—These are of two kinds—such as refer to ordinary *normal* anatomical conditions, and such as are abnormal.

A word about the latter: It is especially to the arrangements of the blood-vessels that I have reference. As is well known, they are subject to numerous variations. These may consist of a deviation either from the usual size of the channels or from their usual position and their connections with other vessels. Many of these varieties, if less efficient, are, nevertheless, not only compatible with life, but cause no disturbance whatever in the performance of the ordinary functions of the body. Others, again, are of such a nature as to be compatible only with the conditions of the circulation subsisting during intra-uterine life, and therefore prove fatal at birth. Some are of considerable interest from

their frequency, and others from the fact that they exist in situations where they are liable to affect the progress or results of surgical operations.

Many vascular variations repeat forms which are natural in different species among the lower animals, representing a harking-back in some cases to forms that have perished; others are obviously due to the persistence of early fetal forms of distribution and not a few are explicable on the supposition of abnormal enlargement or diminution of caliber of naturally existing vessels. Again, the dimensions of the arteries vary to some extent in different individuals, in the two sexes, and at different periods of life. Now, may some of these variations from the *so-called* normal not *also* represent *lesser degrees of efficiency* in the vascular system of the individual, so shall I not say, afflicted?

My idea is that tuberculosis depends perhaps much more than commonly thought upon *anatomical predisposition to infections*. How often do we observe that a family history indicates a marked predisposition to tuberculosis? Of course, this predisposition "resides in the tissues," but are we entirely sure that it resides in their quality, in their physico-chemical, biological characters, in a species of degeneration, vitiation, depravity of their vital characteristics, as the argument usually runs? I am of the opinion that such predisposition, or I would rather say, predetermination, resides to at least an equal, perhaps a preponderating, dominant degree and extent in their anatomical arrangement.

Now, this idea is not new. Confer the views of Hippocrates, the father of medicine, on this very point: the winged or alar type of chest, characterized by the everted, winglike scapulæ projecting from a flat, narrow thorax, was described by him four hundred years before Christ, twenty-three centuries ago, as predisposing to affections of the lungs; the typical alar, phthisical thorax! Consider: the usual seat of the primary lung lesion is one of the apices, usually the right. After one apex has been attacked the disease usually extends first to the *apex* of the lower right lobe (or, at any rate, that of the same side that has first been attacked in the upper apex), and then to the *other*. Would

it not rather be the whole lung of the *same* side that would be involved?

And, why, if not on account of anatomical peculiarities, is the right lobe more frequently, in fact, as a rule, the first to be involved by the tubercular process. Furthermore, wherein is this tissue-predisposition to find expression? It *must* ultimately reside in some way in their anatomical characteristics; in physical vasculo-mechanical arrangements, rather than in some mysterious depraved cell-quality, for which we know as yet at least no equivalent, no expression!

That is where I prefer to seek it. Cancellated bone-tissue in a sense resembles the lung-tissue, and the conditions, anatomically speaking, that surround a tuberculosis of the lung, to my mind, in some respects exactly parallel a case of osteomyelitis. The trauma, the interrupted, slowed blood-stream, sluggishly wending its way through the fragments of bone, impeding its flow and carrying with it the messengers of pain, inflammation, suppuration, destruction, fever, chills and death perhaps—the infecting germs—all the corresponding phenomena are present! And, if that be not the case, then why do we have primary tuberculosis of brain, of bone, the heart even (Vargas), and other tissues and organs, where the disease cannot possibly be attributed to germ-inhalation?

Inflammation of bone always originates in its vascular structures, *i.e.*, the peritoneum and medulla and never (Green's Pathology, page 522) remains strictly limited to either of these parts; hence, the term osteomyelitis, inflammation of bone and marrow. Conner's description must forever remain classic: 'Tis a pity that he wrote so little, but his classroom lectures will never be forgotten by those whose good fortune it was to listen to them!

Among the bones which are primarily affected are the bodies of the vertebræ, the *ends* of the long bones, the bones of the carpus and tarsus, the phalanges, and less often the metacarpal bones and the ribs. The *shafts* of the typical long bones are rarely affected by tubercular processes; that is to say, cancellated bone is

the seat of election for the attacks of pathogenic micro-organisms, because I take it, the circulatory conditions, much resembling those of the lungs, are favorable to such processes.

In 1626 Harvey demonstrated the circulation of the blood in his work, *De Motu Cordis et Sanguinis*. That the blood passes from the arteries into the veins is a necessary corollary of this doctrine, but the mode of passage through the capillaries was not ascertained until discovered by Malpighi in 1661. These are most commonly arranged in a network of nearly uniform size in a given part, though not strictly equal. Speaking generally, their average size may be stated to range from 1-3,500 to 1-2,000 of an inch. Weber describes some as small as 1-4,500 of an inch, and Henle even smaller, some so small, at least on post-mortem examination, as really not to permit a blood-corpuscle to pass!

Now, the smallest of them are in the lung, where the capillary network is very close, as it also is in glands and secreting structures, as well as in the gray part of the brain and spinal cord. And in infants and young persons the tissues are comparatively more vascular than in later and adult life, *i.e.*, vascularity goes hand in hand with tubercular death rate! We need only allude to the filtering function of the lung to make our meaning plain and understand the fact. Right here, however, the question might be asked, why, then, does not syphilis, in the self-same manner, as is claimed by this paper, for tuberculosis reach the lung and localize there? Perhaps this slide shows the reason, at least in so far as it shows a distinctive difference in the behavior of the spirocheta pallida and the tubercle germ towards the blood corpuscles; the spirocheta pallida does *not* enter the blood corpuscles, hence is not *by them* conveyed to distant parts. Such opposite behavior is further illustrated by the different behavior of syphilis and tuberculosis in other respects. The same argument holds good with regard to, for instance, the germ of the sleeping sickness. Going farther, the explanation of the difference in the behavior of the two germs, and others, in fact, for that matter, may with justice and probability be sought in Ehrlich's side-chain theory.

The tendency of pathological processes induced by syphilis is *sclerosing* in character, while that of tuberculosis is resolving, resulting in the production of fibrous tissue on the one hand, in the case of syphilis and in the resolution, the breaking down of the tissues on the other hand, in the case of tuberculosis, in general, though we do know of a fibroid phthisis, and in bovine tuberculosis of this type the tendency to the formation of fibrous tissue, histologically predominates apparently, the lesions themselves, macroscopically, taking the form of nodes and conglomerates, which on serous membranes may be pedunculated, so-called pearl disease. So much for anatomical considerations, normal and abnormal

This distinction that I make between normal and abnormal, meaning with abnormal *not* pathological, but sound, healthy; abnormal merely in differing from a typical established prevailing, usual arrangement—would serve to explain why in a group of individuals otherwise exposed to absolutely the same living conditions, food and environment, some escape the disease while the others, sometimes but a single one, fall a victim to it.

The inheritance of family peculiarities, no doubt equally often expressed in the arrangements of the finer anatomical vascular peculiarities the same as, familiarly, with facial resemblances, would explain the family tendency to the disease so often observed without evidences of the disease itself until it suddenly becomes manifest.

CONCLUSIONS.

Had it been my intention to merely assert the importance of the intestinal tract as the chief primary source of even pulmonary tuberculosis, I could have made such assertion and easily cited the strongest evidence in support of it.

While I shall still adduce such testimony, this was not my original purpose. I rather desired to study the explanation of the mechanism by which pulmonary infection through such sources could be, and, in fact, is brought about, and that is what I have endeavored to do.

It may still be well to show you that there is a brilliant galaxy

of original investigators who can be called upon to verify the statement that food infection, through meat and dairy products, in all probability constitutes by far the greatest cause of even pulmonary consumption. For proof of this we need only refer to the excellent summary of this subject contained in the United States Government report, issued by M. J. Rosenau, Director of the Hygienic Laboratory, Bulletin No. 56, on milk and its relations to the public health, in March, 1909, beginning page 540, under the caption, "The Virulence and Vitality of Tubercle Bacilli in Dairy Products."

Attention is here called to the fact that the inhalation theory, to account for the frequent presence of tuberculosis in the pulmonary tissues has *not* been proven, and that living tubercle bacilli in dust are hard to find or could not be found at all, sputum in fact being very hard to pulverize, and sunlight very easily killing the germs in a few minutes (five to ten) in the translucent material.

On the differences between types of bacilli of the same species, depending on hosts and environments, I have already dwelt sufficiently: Theobald Smith's work can also be quoted in proof of the fact that these distinctions are only seeming, as far as constituting entirely different organisms are concerned, that as a matter of fact the tubercle bacillus includes so many different types that their extremes would leave us in doubt as to their specific classification if they were not connected by a chain of forms of transition.

Mohler and Washburn even conclude, after a comparison of many tubercle bacilli from different sources and careful search of the literature, "that the more the subject is studied the more numerous the instances become in which bacilli of different special types are found occurring naturally in animals far removed from the species which was supposed to be their natural host." We can find nothing in their work to encourage us to undervalue the importance of those from bovine sources as a menace to the public health.

Fibiger and Jensen, among thirty-nine cases of primary tuber-

culosis of the intestines and the mesenteric glands examined by the Imperial German Health Office, found thirteen to be caused by bacilli of the bovine type, and summed up their conclusions as follows: Though bovine types of bacilli are more commonly isolated from bovine lesions, and human types from human lesions, there are cultures that must be considered to be transition forms, having *some* of the bovine, and others of the human type. They also state that the former doctrine which taught that primary intestinal tuberculosis is a rare disease can no longer be considered sound.

Gorter, after careful studies, concludes that human and bovine bacilli are not different varieties, and that the conversion of the one type into the other actually occurs.

Sargo and Suess showed that these mutations were of a character to preclude grouping tubercle bacilli from animals of the different species as special varieties.

Von Behring's views, who ranks as one of the most widely recognized authorities on tuberculosis, we have already quoted at the outset of this paper.

The British Royal Commission on Human and Animal Tuberculosis comes to the same conclusion, viz., the close causal relationship between human and bovine tuberculosis.

Aufrecht in 1900, and Baumgarten in 1901 pointed out that inhalation had not been proven to be the exclusive or even the most important mode of infection with tuberculosis.

Nicholas and Desces in 1902, confirmed by Ravenal in 1903, proved experimentally that tubercle bacilli introduced into the healthy intestinal canal of animals rapidly passed through the uninjured mucosa and appeared in the great thoracic duct on their way to the venous circulation.

Earlier, even, Nocard and his pupils, Desoubry and Porcher, had shown that the passage of bacteria through the normal intestinal wall and their transference to the blood was possible.

It is true that tuberculosis is more commonly an affection of the lung (11-12) than of other portions of the body (1-12). The explanation for this, which was long regarded as satisfactory and,

unfortunately, is still accepted by many, rests on the assumption that the most important source of tubercular infection is finely pulverized tuberculous material, suspended in the air, as dust, and the *direct* exposure of the lung to this dust through the process of respiration. And, of course, if this so-called "inhalation theory" represents the truth, and, further, if it were a fact, as many of those who maintain it, assert, that tubercle bacilli *cannot* pass through the uninjured wall of the digestive tract and reach organs remote from it without leaving evidences of their passage, *then* tubercle bacilli in dairy products have *no* important significance for the public health.

That is why there has been given so much thought to the mode of infection, to the gateway through which the bacilli enter the body.

But as long ago as 1868 to 1874, Chavreau brought about pulmonary tuberculosis by the ingestion (*per vias naturales*) of tubercular material *without* producing pathological conditions in the digestive tract.

And recent investigation prove more and more conclusively that the introduction of the tubercle bacilli into the body with food may lead directly to the development of pulmonary tuberculosis without lesions in the alimentary canal and without intermediate lesions of disease on the pathway between the digestive and respiratory organs.

The most important investigations on this subject are probably those of Calmette and his associates, among whom my teacher, Georges Petit, of Paris, 1907.

These investigators claim, and are worth quoting in full in support of their claim, that dust particles *never* penetrate further into the lung than to the first branches of the bronchi; that tuberculosis is *constantly* a disease, the infection of which enters through the intestines; that tubercle bacilli may penetrate the intestinal wall *without* causing lesions (how, I have shown you); that the bacilli may pass through the mesenteric glands without causing lesions; that the bacilli frequently cause primary lesions in the mesenteric glands of young experiment animals (because

there is greater proliferative, protective activity in the gland-tissue of young animals), but commonly pass *through* those of adult animals, and then cause primary pulmonary tuberculosis; that tubercular processes of the lung *never* begin in the bronchi or alveoli, but *constantly* in the capillaries, especially in the finest capillary network of the subpleural tissues, etc.

The capillary system of the lungs is a double system—a deep, penetrating system—and a superficial sub-pleural system, hence tubercular pleurisy so common. But Aufrecht's work relative to this localization of the *earliest* lesions of pulmonary tuberculosis is really conclusive. Here it is: "First, the initial changes of the apices of the lungs, as I have convinced myself, by repeated anatomical examination, do *not* spread from the terminal branches of the bronchi, and, second, the cheesy tubercle in the lung is associated *not* with the finer branches of the air-tubes, but with the terminal capillaries of the pulmonary arteries."

And while not especially an advocate of the intestinal route as the sole mode of infection, he ends his article here referred to with these words: "The inhalation theory for lung tuberculosis is no longer tenable." (Kohler.)

Orth makes the statement that even with localized tuberculosis in the lymph glands and the lung, we *cannot* exclude the intestine as the portal of entry of the tubercle bacillus. At the International Conference, held in Vienna during September, 1907, he said the tubercle bacilli can enter the body from the intestinal canal, which might itself, however, remain completely unaffected. Moreover, from the prophylactic point of view, the channel of infection was of only secondary importance, as the object to be aimed at was the destruction of all *sources* from which infection might take place. And as sources of infection he named milk and butter from tuberculous cows and sputum from tuberculous individuals, and bovine tuberculous he characterizes as undoubtedly infectious for human beings.

Klebs has convinced himself that tuberculosis is a disease of the lymphatic system, and may remain such until the end of life, and that infection occurs through the intestines, most frequently

with bacilli contained in cow's milk. He claims to have established this as a fact with experiments made at Berne and published in Virchow's *Archives* in the early seventies of the last century. He says that he has found no reason to change his views, and calls attention to the conclusive manner in which they have been proven by the unimpeachable experiments of Orth, Von Behring and Calmette.

Cortez adds his testimony to show that the intestinal mode of infection is not rare, and Bougeot showed with rats, as was shown by the Bureau of Animal Industry, with hogs and cattle, that the injection of pure cultures of tubercle bacilli into the portions of the body as remote as possible from the thorax, caused pulmonary tuberculosis *without* intermediate lesions to connect the location of the disease in the lung with the portal at which the infecting bacilli were introduced.

Vargas, in his article before the sixth International Congress on Tuberculosis, well says, the lung has a very important function; it filters or strains the foreign particles from the blood, retaining the bacilli.

Calmette and Guérin have shown that pulmonary anthracosis does *not* occur through the inspired air directly, but after the coal-dust has first been absorbed by the mucosa of the digestive tract and *then* passed on to the lymphatic system.

Sir Wm. Whitla and Symmers, inspired by these experiments, introduced into the stomach or peritoneum of animals India-ink and coal-particles; they passed the intestinal epithelium without leaving any trace, reached the nodes and lymphatic vessels, and from them passed on to the blood, to be detained by the pulmonary capillaries.

Enough, I think, has been here quoted and submitted from the many investigations that have been carried on to serve to prove the fact that tubercle bacilli can and do penetrate the wall of the digestive tract without affecting it and pass to the lung and there cause lesions, that it will not be necessary to go farther into this aspect of the question; it has been abundantly demonstrated that the intestinal mode of infection for pulmonary and

other forms of tuberculosis, unlike the inhalation mode directly into the lung tissue, is not merely a theory, but a well-established truth which has *forced* its way to recognition in the face of considerable opposition. Neither can the prevalence of tuberculosis as a pulmonary disease be used, as even so great an observer as Koch did, as an argument to underestimate the danger of tubercle bacilli in dairy products; on the contrary, the mode of infection with tuberculosis, the certainty with which tubercle bacilli may enter one portion of the body and leave it entirely unaffected and cause disease in other remote portions of the body, *condemns dairy products infected with tubercle bacilli as a serious menace to public health.*

Continuing to quote from the Government report: We may also conclude, as far as it is possible to test the vitality and virulence of tubercle bacilli from different sources and in different environments, that those from cattle are, as a rule, the most virulent, and that it would seem clear that dairy products generally, and butter especially, supply an ideal medium for the preservation of both the life and the virulence of tubercle bacilli. It might be mentioned that the danger from meat is, as a matter of course, minimized, because of the heat as a rule applied in preparing it for the table, be it by cooking, roasting or other methods, as the case may be.

Therefore the elimination of tuberculosis from the dairy herd is urgently recommended, not only because tuberculosis among cattle is a serious cause of pecuniary loss, as Uncle Sam's report has it, so serious indeed that from the strictly economic point of view it must be regarded as the most important problem that those interested in animal husbandry can undertake to solve, but because, as I hope I have been able to show you, the protection of the public health urgently requires it.

I feel that in thus presenting for your consideration anatomical facts co-ordinated and brought into intimate relationship, I have submitted matter of the gravest import concerning the problem of the causation and spread of tuberculosis.

I feel that there is basis enough to warrant the most thorough

investigation of the aspect of the problem which brought us together here today, viz.: The food-route, the gastro-intestinal paths of conduction of the disease.

To a further direct elucidation of the mechanism by which tubercular infection is thus introduced into the human body, especially its localization in the lung, I shall henceforth devote all my energy.

REFERENCES AND BIBLIOGRAPHY.

From the following works I have frequently, liberally and even literally quoted, and am therefore correspondingly indebted to their authors, which I hereby beg to acknowledge:

The anatomical and physiological considerations advanced are taken from: "Quain's Elements of Anatomy," and the various authors who have contributed to this work, especially Edward Albert Schaefer and George Dancer Thane.

"Stewart's Manual of Physiology."

Other works referred to are:

"Green's Pathology."

Wladimiroff, "On the Biology of the Tubercle Bacillus," Proceedings of the Sixth International Congress on Tuberculosis, Washington, D. C., 1908.

Metchnikoff's various works.

Vargas, "Tuberculosis of the Heart," Proceedings of the Sixth International Congress on Tuberculosis, Washington, D. C., 1908.

Schroeder and Cotton, Bulletin of Bureau of Animal Industry, 1908-1909.

M. J. Rosenau, "Milk and Its Relations to the Public Health," Hygienic Laboratory, Bulletin 56, March, 1909.

Other authors are mentioned in the text.

CONCLUDING NOTE.—In connection with the above I have to thank Dr. E. I. Fogel, of this city, for the receipt of an extremely interesting and important paper by Leonard Findlay, M. D., "Über Den Ursprung Anthrakose der Lungen," in a collection of essays dedicated to Professor Heinrich Finkelstein, of Berlin, by his pupils and collaborators, May, 1911, in which the above views are earnestly combated, and especially Calmette's work on pulmonary anthracosis via the intestine, is directly controverted.

This only adds to the interest and fascination of the subject, and shows that the problem is still an open, debatable one, worthy of our most earnest endeavor and study.

A. O. Z.

"CLAMBAKE FOR FAMOUS TROTTER" is the title of an article which appeared in the New York *Herald* of August 21, and which speaks of the celebration of the 27th birthday of "Kingwood," a trotting horse, who, with his genial owner, Mr. George A. Coleman, were familiar sights on the New York Speedway a few years ago. Everyone in New York knows "George" Coleman, keeper for many years of the "Kingwood stables," named after his favorite horse, who has a mark of 2:17¼, but has trotted trial heats in 2:08¼. Mr. Coleman first owned "Kingwood" when he was six years old, but has sold and re-bought him three times, buying him the last time to insure him peace and plenty for the rest of his life. More than one hundred business men attended the clambake given in honor of the 27th birthday of the trotting horse, who, done up in ribbons, was an appreciative spectator, munching oats and idly switching flies with his graceful tail.

THE RELATION OF THE VETERINARY PRACTITIONER TO MUNICIPAL FOOD INSPECTION.*

BY GEO. H. GLOVER, FORT COLLINS, COLO.

A paper on sanitation might include many things. The subject is so broad that to do it justice in all departments would be like issuing one stupendous volume of "universal knowledge"; I have thought it better, therefore, to deal specifically with two or three phases of the subject rather than to generalize, in a necessarily superficial way, on the entire subject of sanitation as applicable to veterinary science.

Those of us who are in the latitude of the half century zone are fortunate indeed that we have been privileged to live so long, at a time cotemporaneous with the most marvelous progress in every department of human activity that the world has ever known. This period is especially conspicuous for the enlarged opportunities in education, for a more intimate acquaintance with the laws of nature, for a wider horizon, a greater optimism and we trust a more abiding faith.

Commensurate with the most conspicuous of notable achievements in the arts and sciences has been the evolution of the theories, facts and methods pertaining to the profession of veterinary medicine. The animal wealth has increased in this country many fold and this growth is marked, not by a numerical increase alone, but because of better breeds of animals, and has been fostered by a growing appreciation everywhere, that *animal industry is the major part of agriculture.*

The subject that I wish to present for your consideration to-day is centered around the proposition that relatively too much of the work and too large a share of the interest of the veterinarian is dedicated to conserving the 4,000,000,000 dollar live stock

* Read before the Missouri Valley Veterinary Association, at Omaha, Neb., July 2, 1912, as a part of the report of the Committee on Sanitation.

investment of this country at the expense of his duty, his privilege and his obligation as sanitarian and guardian of the public health.

The work of the veterinarian, briefly summarized, consists in conserving the animal wealth and guarding the public health. I feel that the profession is at fault in neglecting and no doubt underestimating its duty in the latter instance. True it is that we have taken an active interest in the relation of bovine tuberculosis to the human, but aside from this one disease we surely cannot be accused of over-zealousness. The intertransmissibility of tuberculosis, for example, has interested us as a scientific fact, but the actual participation in the prevention of such transmission has given some of us very little concern. I feel that we have been neglecting an important and remunerative field of usefulness and one that is fast being usurped by our medical confreres and too often occupied by laymen.

NEED FOR MUNICIPAL FOOD INSPECTION.

It seems almost superfluous to argue the need for municipal food inspection. It is surely destined to be an important factor in modern civilization. It is now in its incipency and while in many instances is in bad repute because of being in incompetent hands, it is certainly destined to be made more efficient in the large cities and to be extended ultimately to the small cities and even to the towns. The esthetic sense requires that the food we eat shall be clean and appetizing, and common sense demands that we get our money's worth, and that food purchased shall in the highest possible degree nourish and support life, and not endanger it, or by its bad quality contribute to all that goes to make life "not worth the living."

The many instances of meat poisoning, sausage poisoning, fish poisoning, of parasitic and bacterial diseases transmitted through the medium of food to the human, of serious outbreaks of typhoid fever, diphtheria, scarlet fever and other diseases transmitted through the medium of milk, together constitute an argument for efficient food supervision that cannot be denied.

The following prophetic statement is taken from the last

Year Book of the United States Department of Agriculture: "The greatest source of danger with regard to the meat supply of the country comes from the meat which is not subject to inspection. The Government inspection is applied only to such meats as are produced by persons or establishments doing interstate or export business and covers but a little more than half of the country's meat supply. The remainder must be looked after by state and municipal authorities, and it is gratifying that there is a general awakening to the need for local inspection. Inspection is already being carried on by many cities and a few states, and in others steps are being taken to establish an efficient inspection system."

The law which regulates the Federal inspection of meats is no broader in its scope than is that respecting the supervision of other foods. Much more than half of all food inspection must always, because of constitutional Federal restrictions in interstate commerce and trade, be done by municipal and state authority, and because of inability to conserve the time and best efforts of inspectors, would require an inspection force, on meats alone, of probably ten or twenty times the number of men employed in the Government service in the same capacity.

Aside from consideration of export meats there is now a greater need for state and municipal inspection of meats than there is for Federal inspection, and this need is fast crystalizing into a demand. We are credibly informed that diseased and suspicious animals are not sent to abattoirs having Federal inspection, but on the contrary are sold to small establishments that have not inspection and where condemnations are almost unheard of. If suspicious animals are not turned back sometimes from these large establishments and find their way to slaughter houses where conditions are easier, it guarantees a standard of morals in this business that is far above the average of frail human nature.

I feel confident, then, that I am not far astray when I assume that, while there is Federal inspection of a little over half of all animals slaughtered for food, there is probably eighty per cent.

of diseased animals killed for food where competent inspection is now impossible.

In Colorado the municipal slaughter houses were in such a degraded and revolting condition that the office of State Meat and Slaughter Plant Inspector was created four years ago. The work of this office is limited to sanitary inspection of slaughter houses, markets and other places where meats are handled for local or intrastate trade.

THE VETERINARIAN AS MUNICIPAL FOOD INSPECTOR.

In many places where municipal food inspection has been inaugurated it is inefficient, not properly systematized, a mere pretense, and is in the hands of men who, to say the least, have a very meagre conception of what they are trying to do. It is a sad commentary upon the status of modern politics as well as upon the intelligence or integrity of many city officials, that spoils of office should determine the appointments to offices where human life is the price, rather than the consideration of scientific training, experience and aptitude for the work. Our lives are in the hands of our food inspectors and a knowledge of their unpreparedness to safeguard us, does not tend to whet our appetites nor encourage good digestion.

In Colorado the State Meat and Slaughter Plant Inspector is a layman and until the last thirty days all of the meat and dairy inspectors in Denver were laymen, and Fort Collins is now the only city in the state where the responsibility of food inspection, in any of its branches, is authoritatively in control of a veterinarian. This condition exists in face of the fact that the state is supporting an educational institution which trains men for this work and that it costs over \$1000 for every man that is graduated in veterinary medicine. Since the last election we have succeeded, by hard work, in placing a graduate veterinarian in the office of Chief Meat Inspector in Denver and two veterinarians as milk and dairy inspectors.

The appreciation of food inspection and the price the public will be willing to pay for it, is, after all, destined to be determined by the quality of service rendered. The veterinarian

is the only man qualified by training to render an efficient and appreciative service.

The reasons why these positions are not filled by veterinarians are: *First*. Such positions come under the head of what is known as "Political jobs" and veterinarians are too busy with their work to perfect themselves in the art of modern city politics. *Second*. The salaries paid are no inducement to a trained veterinarian. These positions are filled by non-professional men and the supply far exceeds the demand. The law of supply and demand is operative here, as elsewhere, and in this instance the supply is based upon the quantity of professional politicians who must be rewarded, because they have helped to elect the ticket, and not upon the quality of men as determined on the basis of training, experience and competitive examinations.

Everywhere the world is demanding service and while often distressingly slow, is in the end willing to pay for it. The public will not long be content with a proposition so absurd as having part of its food supply under a most efficient Federal inspection and the remainder without supervision or in the hands of men who, no matter how good their intentions may be, are incompetent to give the protection expected, as guardians of the public health.

FOOD INSPECTION IN SMALL CITIES AND TOWNS.

The need of food inspection, all things considered, is as great in small cities and towns as in large cities, but, the problem of finance is more difficult and the present small appreciation of its importance renders the support of such a proposition almost impossible. Many cities with a population of from 5,000 to 10,000 have adopted, more or less, effective measures to insure a more sanitary milk supply, but have not extended the work to include the inspection of other foods.

The requirements in milk and dairy inspection throughout the country are far from being uniform, are often inadequate and sometimes impractical and absurd. In small cities the supervision of the milk supply is usually in the hands of the city

physician who gives it indifferent attention or has a layman as deputy, and neither of them is familiar with the diseases of dairy cows, and either have not the time or a knowledge of the subject that insures success.

I feel that there is ample reason to criticise the average dairy inspector because of his officiousness. The most wholesome attitude is that of mutual helpfulness and co-operation, of endeavoring to make the work essentially educational, and not a police supervision, with mandates that court the opposition rather than the co-operation of the dairyman. It is possible to produce a very superior quality of milk with a very meagre equipment if the dairyman knows how and has a disposition to try. To enthuse the dairyman with an ambition to make conditions and methods such that a superior quality of milk is possible, requires tact on the part of the inspector and offers the only hope of a lasting success.

The production of high grade milk means the active, constant and intelligent supervision of everything pertaining to the business, beginning with the breed of cows, the feeding, diseases of dairy cows, drawing the milk under sanitary conditions, refrigeration, separation, transportation and delivery. The sum total of little things is what counts in the final delivery of milk at the kitchen door. It is as futile to try to legislate a dirty person into cleanliness as it is a sinner into godliness. The only hope is to show him proper methods, encourage him for every effort and show him practical results from the laboratory and a greater demand for the superior product under improved conditions. Cleanliness for its own sake does not appeal to the average dairyman; he must be shown that it pays, and this the competent inspector can, and must do, if he is to get results.

As the honest physician gives much of his time and efforts to prevention of disease and public health problems, so is the veterinarian under the same moral obligation to do his share in the interest of the welfare of the community, for the common good. I must accuse my fellow workers as a whole of being derelict in this matter and manifesting a selfishness which is not praiseworthy. Unless a city is willing to volunteer a tempting

salary the veterinarian has in most instances shown his spleen by refusing to take any interest in the matter whatsoever.

THE TUBERCULOSIS PROBLEM.

As sanitarians, what is to be our attitude respecting tuberculosis? We have reached a crisis. We must go forward, but how? This is not only the greatest of disease problems, but it has a tremendous economic significance. I doubt if there are a dozen cities in the United States that has detected and removed every tuberculous cow from its milk supply. We are groping in the dark, making a spasmodic but ineffectual effort, here and there, and silently praying for a Moses to lead us out of the wilderness. Science has revealed many important facts and now it is for us to find ways and means of using them. We are eating the meat and drinking the milk of tuberculous animals; we are practically certain that children especially are contracting the disease from cattle; we have a means of detecting the presence of tuberculosis in animals; there is a financial loss of millions of dollars every year; we feel that we must do something, but we have no definite plan for united action. On the other hand, while there are millions of dollars invested in breeding and dairy animals, these animals, even though tuberculous, still represent in most cases some real value. Property rights must be respected and King Mammon has not been dethroned. The Bang system, with some modifications, it seems to me, is the best solution at this time. The American method of testing and slaughtering all reactors, if generally enforced, would bankrupt every state in the Union.

As an outline of a general policy respecting this disease in Colorado, I am willing to compromise on the following basis:

1. The compulsory testing of all breeding and dairy cattle.
2. Instead of slaughtering all reactors, isolate them and build up a healthy herd, according to the Bang system.
3. Allow the sale of milk from reacting cows, after pasteurization and proper labeling.
4. A general and efficient supervision of pasteurization of milk.

This plan if adopted would mark one step of progress and would have the co-operation of dairymen and breeders instead of their most determined opposition. The sale of pasteurized milk from tuberculous cows would be far better than using the raw milk from tuberculous cows, as is done at the present time.

Until we, who are presumed to be the highest authority, manifest sufficient faith and knowledge on this subject to crystallize a definite plan for concerted action, we cannot expect that our spasmodic experiments here and there will command a following that will mark any appreciable success. If we are to have any authority in the role of guardians of the public health, to take an active part in guarding the nation's food supply, it is necessary that we unite upon some plan for action.

A NEGLECTED OPPORTUNITY.

To summarize, I wish to say that the central thought in this paper is to urge upon the veterinary practitioner a serious consideration of the matter of taking a more active interest in food inspection, as an avocation, especially in small cities and towns.

I believe, as previously stated, that it is our moral duty to do this because we are the only men qualified by training in all branches of the work. It will help to extend our acquaintance and advertise our business as practicing veterinarians. If we are discreet and tactful it should make but few enemies, but many appreciative acquaintances and friends. We will have time to attend to all of the practice we are now doing, with very few exceptions, and will soon have the opportunity to do much more. Idle hours will be spent in going through the shops and markets, mixing with people, getting acquainted, showing a public spirit which augurs for an enlarged opportunity and a greater appreciation.

Now the question is,—as busy practitioners, can we afford to do this? I believe that we can, and not only do I believe that it is, in a sense, a duty of citizenship and of humanity, but that it will give us a much desired prestige in the community, extend our influence, afford the much needed opportunity to extend our practice and be altogether worth while. "Think on these things."

CRYPTORCHID CASTRATION.*

BY DR. A. B. McCAPES, BOULDER, COLO.

PREPARATION.

The success of an operation on a cryptorchid depends largely on the condition the animal is in when the operation is performed, and the dexterity of the operator; therefore considerable care should be exercised before attempting to operate. It must be remembered that the operation is an abdominal one, and abdominal operations in the horse are not to be considered lightly; furthermore there is no way to determine what conditions may present themselves when the operation is being performed. For instance, if the patient is a colt or young horse, one should determine by examination and by questioning the owner, whether or not the patient or any other colts or horses living with the patient has recently or at any other time been afflicted with strangles. If such an examination proves that strangles is present, the operation should be postponed. If the patient shows an unthrifty condition, determine if possible the cause of such condition, and if it is produced by some debilitating disease, postpone the operation until the patient is improved.

If it is apparent that such condition has been brought about by improper food and the patient shows a normal temperature and normal pulse, the operation may be performed with safety. This is especially true of colts running in the pasture and of old horses at work.

Patients that have been kept confined in the stable, especially when the surroundings are filthy (as is often the case), should not be operated upon until they have had a few days of exercise, the stable thoroughly cleaned of all fecal matter and of all stable refuse of any character. The patient should be thoroughly

* Presented at the semi-annual meeting of the Colorado Veterinary Medical Association, Ft. Collins, Col., May 31 and June 1, 1912.

cleaned of any faecal matter adhering to the body and before being returned to the stable should have his stall well bedded with clean straw or hay. It is necessary to take these precautions to prevent the possibility of infection, either at the time of operation or immediately afterwards.

Some operators advise having the patient off feed several hours before the operation with the view of making the operation easier to perform. Long experience has proven to me that this is a serious mistake; instead of making the operation easier, it will many times make a more difficult case out of one which would have been easy had the horse been in a normal condition, as relating to the amount of food and faecal matter in the bowels. When the bowels are full they hold normally (except in rare cases) the testicles against the abdominal wall at a point near the internal abdominal ring, so that they may easily be found by the operator. When the bowels are empty this pressure is removed and the testicles may float from their original position to such an extent that it will be difficult and in some cases impossible to find them without a radical operation.

ABNORMAL CONDITIONS.

While cryptorchids must be considered as abnormal under all conditions, I wish to speak of three conditions which I am justified in considering especially so, since they occur in only about two per cent. of the cases:

1. We find cystic tumors of varying sizes in connection with the testicle or spermatic cord.
2. An indurated and hardened condition which causes the testicle to become from twice to at least six times the original size.
3. (See specimen) Since these conditions can never be determined by the operator until he has located the spermatic cord and testicle, it is necessary that he should always have them in mind when operating.

When difficulty is experienced in securing the testicle from the abdominal cavity, he should examine thoroughly and de-

termine why. This can be done most effectively by grasping the spermatic cord, already out, with one hand and passing the forefinger of the other hand into the opening, when he can feel the testicle and determine why it does not come through the opening. If the operator finds a cystic tumor of sufficient size as not to allow the passage through the opening without danger of making it so large that hernia will result, he may do one of two things, either tap the tumor with a trocar and draw off the fluid, or have an assistant pass the hand through the rectum and by gentle pressure against the tumor force the fluids gradually through the opening. When the operator finds either of the other two conditions, he must, by careful manipulation, remove the testicle through the opening at the same time using great care to prevent tearing a larger opening than is necessary to admit of its passage. This can best be done (as in the former case) by an assistant pressing the testicle against the opening. The operator should at all times have a firm hold on the cord and with the fingers of the other hand press the edges of the opening around the testicle. When removed if the opening is considered too large, the edges of the skin should be stitched together and remain so until some swelling has taken place, when the stitches should be removed. The animal should be watched for a few hours after he has regained his feet, and if the intestines protrude through the internal opening, they will show their presence by an enlargement at that point, and possibly by pain exhibited by the patient. If this condition presents itself the hernia can easily be reduced by the pressure of the hand over the enlargement.

TECHNIQUE.

Cryptorchids may properly be placed in two classes, namely: perfect and imperfect. Those cases in which the testicle and the cord are both retained in the abdomen are known as perfect cryptorchids; those in which the testicle alone is retained in the abdominal cavity, the cord being looped into or through the inguinal canal, are known as imperfect cryptorchids. Those cases known as flankers, in which the cord and testicle have descended,

but are retained close to the external ring, cannot in any sense be termed cryptorchids.

Owing to the site of this operation it is necessary to use a throwing harness, which may be tied in such a manner as to flex the hind limbs as much as possible without injury to the horse.

OPERATION.

The animal now being in a suitable position, the operator should have at hand two dishes in which antiseptic fluids are contained; in one of them should be his knife and whatever instruments are to be used in severing the testicle; I prefer the ecraseur for this reason: In a number of cases the cord will be short and some difficulty will be experienced in getting it down where the emasculator might be used, while the ecraseur may be placed over it even if it is covered by the skin and tissues. The antiseptic contained in the other dish is to be used in washing the parts around where the incision is to be made. These parts should be thoroughly cleansed, using a carbolated soap in conjunction with the antiseptic. The finger nails should be cleansed of all dirt and the hands thoroughly cleaned and dipped into the liquid contained in the instrument dish or into a new solution made in another.

After the parts have been prepared as stated and the proper side determined, make an incision through the skin about four inches long, parallel with the vein, and about four inches above the median line, then break down through the cellular tissue, going backwards and slightly upwards until you have broken down sufficient tissue to place your hand underneath the skin. Some care should be exercised in breaking down the tissue in order not to injure the vein, under which the hand must be placed when inserted into the opening. After the hand is placed under the skin the fingers should all be closed on the palm of the hand except the *fore finger*. With this finger the operator should continue to break down the connecting tissue between the abdominal muscle and the thigh until the finger has reached the internal abdominal ring; this point will be known by the slight depression

appearing under the finger. It must be remembered that the internal abdominal ring is rudimentary in the cryptorchid, especially in those cases where the spermatic cord and the testicle are both retained in the abdominal cavity. In those cases where the spermatic cord has descended through the inguinal canal the ring is more developed and sometimes complete. The operator must not attempt to break through at this point, but must pass the fingers backwards and downwards to a point about one inch from the ring or depression, then by doubling the fingers at an angle of about forty-five degrees, thus bringing the point of the finger nail in contact with the aponeurosis of the obliquos and externus muscle; by a few short movements sidewise the fingers will pierce the aponeurosis and enter the abdominal cavity. Occasionally when the finger passes through the aponeurosis it does not pierce the peritoneum, but the latter seems to float or push ahead of the finger; in this event some trouble is experienced in piercing the peritoneum, and nothing can be done in the way of locating the spermatic cord until your finger has pierced the peritoneum. Usually the better way to do this is to grasp a fold of peritoneum with the end of the finger, gently pulling it through the opening in the aponeurosis; this usually tears a hole which the operator can easily find and he is then ready to locate the spermatic cord. This is best done by moving the finger around the opening very slowly, keeping the palm of the finger pressed against the peritoneum. By the sense of feeling the operator will know when the finger has touched any part of the cord. If the finger comes in contact with the spermatic artery it will be known by its peculiar doubled condition. On the other hand, if the finger comes in contact with the vas deferens it will be known by its smooth feeling and dense cordy condition. When either of these structures are touched, move the finger away from the abdominal wall sufficiently to grasp the structure and press it against the abdominal wall, where it may be felt more plainly and its true character more definitely determined. When satisfied that you have found any part of the spermatic cord, draw it through the opening and by careful manipulation of the fingers

of the other hand, inserted under the skin and cord just brought out, you will be able to secure the testicle through a very small opening. It is essential that the opening be small, as a large opening might result in hernia. This method of locating the spermatic cord will be successful in a large majority of cases; however, there are a few cases in which the cord is not so easily located. In these cases the operator must explore deeper into the pubic region. This must be done with care and under no condition must the operator insert the whole hand unless he cares to make the operation a radical one, which is seldom advisable. If the cord cannot be found with one finger, it will seldom, if ever, be found by inserting the whole hand. In a great many cases if the operator will work very slowly with the finger he will be surprised to find the cord located at some point which he has just explored; this is probably due to the fact that the bowels have moved the cord or testicle from some remote part to a point within reach of the operator. If, after a few moments' exploration as described, the operator fails to locate the cord, the hand may be removed and the horse rolled over and back again. This movement will sometimes assist in bringing the cord to the point at which the opening has been made. It may then be easily found by again inserting the finger.

IMPERFECT CRYPTORCHIDS.

Imperfect cryptorchids are those cases in which the spermatic cord has descended through the inguinal canal, the testicle being retained in the abdominal cavity. This condition cannot always be determined before the incision is made. When, therefore, the incision through the skin has been made and the connective tissues broken down, one should examine carefully to make sure whether or not this condition is present; if so, the following method should be followed: Grasp the loop part of the spermatic cord with the right hand (if the testicle is on the right side) and pass the left hand into the opening and with the left forefinger make the opening through Poupart's ligament, and at the same point as in operating on a perfect cryptorchid. When the finger

has entered the abdominal cavity, pass the finger upwards to the internal ring, grasp the spermatic cord and draw it through the opening thus made. If the operation is for the left testicle the operator should grasp the spermatic cord with the left hand and use the right hand to make the entrance into the abdominal cavity.

Under no circumstances should the operator attempt to pull the testicle through the inguinal canal, for in a majority of cases it cannot be done and if attempted will result in hernia.

AFTER TREATMENT.

There is considerable difference in opinion among operators as to the after treatment. Some advise packing the incision with gauze, others maintain that the animal should have exercise for several miles every day, while a few insist that it should be put to regular work. I am obliged to differ very materially with these operators as to the advisability of packing the wound and of exercising the animal.

I object to the packing because it is unnecessary. When the packing is removed it leaves an open wound which is apt to become infected by pus, producing germs as well as others of a dangerous character. I am not in favor of exercising for the first twenty-four hours, because exercise will prevent any adhesion taking place in the inner wound. If we can get healing by first intention we have accomplished the desired result, and eliminated some chance of infection. If the animal is exercised immediately following the operation there is considerable probability of air entering the abdominal cavity and may result in infection and enteritis. Therefore I advise placing the animal in a clean stable with plenty of clean, dry bedding, for at least twenty-four hours. At the end of this time he may be turned out into a clean corral, or better, into a pasture and allowed to exercise at will.

REPORT OF CASES.

Out of the first nine hundred cases, the following have ended fatally:

1. 1 two-year-old, peritonitis.
2. 1 six-year-old, left testicle up; considerable trouble experienced in locating it; it was finally found and removed; horse was placed in stall and was found in an hour cast, with intestines out and was killed.
3. 1 bay horse, about five years old; there was no evidence of the testicle having been removed. Operation commenced on the left side and continued on right; after thorough exploration no testicles were found; the cause is unknown. The horse died in about a week, presumably from peritonitis.
4. 1 colt, two years old, died from septic poisoning.
5. 1 colt, three years old, died from hemorrhage from normal testicle. Hemorrhage took place about an hour after the operation and continued for ten hours, when death ensued.
6. 1 horse, seven years old, of mean disposition; had not been out of the barn for months; the horse had scars on both sides, but no remnant cord was to be found on either side; both sides operated on without success; horse died in a few days; cause unknown.
7. 1 horse two years old; the operation was easy; the colt found dead in the pasture at the end of first week; cause unknown.
8. 1 horse, two years old; operation easy; wounds were healed; died from tetanus at the end of two weeks.

In one hundred and ten (110) cases the left testicle was found in the abdominal cavity in sixty (60), right testicle in forty-two (42) and both testicles in eight (8).

SECRETARY C. A. CARY writes: "A joint meeting of the Alabama and Georgia Veterinary Medical Associations will be held at Auburn, Ala., in the Veterinary College of the Alabama Polytechnic Institute, August 2 and 3. This meeting will be one of the best ever held by the two associations and it is hoped that it will arouse sufficient interest to get all graduate veterinarians in Alabama and Georgia into their respective state associations."

THERAPEUTICS.*

BY DR. H. D. BERGMAN, AMES, IA.

As an introductory subject, I shall first consider, and endeavor to answer, the oft-repeated and well taken question of the practitioner, as to why drugs fluctuate in price from year to year, why certain drugs in common use have doubled, trebled, and quadrupled in price in the past year, and also endeavor to show how an extremely popular drug may lose its popularity with the profession, figuratively speaking, over night. There is no one causative factor for the increase in price of drugs. One of the principal reasons, however, is the necessity of their coming up to pharmacopeal standards at the present time, and, while we are paying a larger price, we are getting a purer product and not one containing from 5 to 25 per cent. of some foreign inactive substance. Again, the increased demand has to do with the increase in price. At the present time, people do not treat their own ailments and those of their animals with simple home remedies as in the past, but there are more physicians and veterinarians employed, and hence an increased demand for medicinal agents, and we all know that demand regulates price of any commercial product. Fluctuations in price depend largely, also, on the success or failure of the crop from which certain drugs are derived. For instance, the flax crop last year was a failure, and I think you all know something in regard to the price of linseed oil at present. Two or three years ago santoin was worth in the neighborhood of \$4 per pound. Today it is worth \$17, due, the wholesalers say, to crop shortage, and we are glad to note also that they claim the rise in price is only temporary. In the case of opium, the Chinese government will now only allow a certain amount to be produced, owing to the great increase of the opium smoking habit among her population. The other countries have also put

* Committee Report, Iowa Veterinary Association, Cedar Rapids, November, 1911.

a ban upon its importation except for certain medicinal purposes, hence, of course, the price goes up. The Japanese control the production of camphor, and only allow so much to be produced, hence increase in price. Lastly, and though it may seem peculiar, it is due to our exact knowledge of the composition and medicinal value of drugs (thanks to our eminent botanists, pharmacologists, chemists, etc.) that has increased the price, for their researches have resulted in an enormous number of worthless drugs being thrown aside, and, although we get a corresponding increase in price of the remaining drugs, yet we know exactly what we are using, and their various medicinal properties from a therapeutic standpoint. An example of how suddenly a drug may drop in popularity may be cited in our old friend echinacea, which, a few years ago, was widely used, and indeed is used a great deal still. But when the Council of Pharmacy and Chemistry of the American Medical Association made a complete study of echinacea from all standpoints, and the eminent Henry Kraemer, editor of the *American Journal of Pharmacy*, came out last July with the report that echinacea had been investigated thoroughly and had been deemed worthless and unworthy of further consideration as a medicinal agent until more reliable evidence had been presented in its favor, the profession in general dropped its use, and the sales of echinacea decreased enormously.

Observations and results derived with a few of the new and some of our older drugs:

Pyoktanin Blue.—Pyoktanin, which has been used successfully for some time in human medicine, has now won a place in veterinary medicine. As an antiseptic, disinfectant, and analgesic, it is extremely valuable. Excellent results have been reported from its use in surgery, disease of the throat and nose, wounds, malignant neoplasms, and in diseases of the eye. It is recommended as having a specific healing effect in foot and mouth disease. Pyoktanin is in the form of a powder and is used from 1-1000 to 1-5000 solution. It is said to be active in one to thirty thousand solution. The powder is worth about \$1.50 per ounce.

The Sulphocarbolates or Phenosulphonates.—Both sodium

and zinc sulpho carbolate have stood the test, and demonstrated their value as intestinal antiseptics and tonics internally, and as astringents and stimulants to foul ulcers and slowly granulating surfaces externally. We have been getting excellent results at the college hospital by the use of zinc sulphocarbolate applied as a dusting powder to slowly granulating surfaces, especially in summer sores.

Balsam of Peru.—While speaking of stimulants and antiseptic dressings for foul wounds and slowly granulating ulcers, I would like to mention balsam of Peru applied undiluted, with which I have observed good results.

Iodoform.—The use of iodoform in chronic metritis or pyometra with purulent discharge has been tested quite thoroughly of late with favorable results. The iodoform with boric acid, two to four drams of each, is placed in a capsule, and inserted into the uterus following the use of whatever antiseptic injection is being used. A capsule is not necessary every day, but every third or fourth day, and gradually diminishing to one a week or ten days.

Petrox Iodine.—Petrox iodine is a new substitute for tincture of iodine for external application where the absorption of the iodine is desired as in actinomycosis, etc. Petrox is a saponified oleaginous vehicle for the external application of iodine. The iodine may be incorporated in the petrox in whatever per cent. is desired. It has this advantage over the tincture of iodine, in that, when the tincture is applied, the alcohol at once volatilized, leaving only the dry iodine on the surface, which is not absorbed thoroughly, as it is in petrox iodine, where the iodine remains incorporated in the oily vehicle and is slowly and surely absorbed.

Stovaine.—We have been using stovaine as a local anesthetic at the college hospital for some time. It seems to possess all the qualities of cocaine, and has the advantage of not producing the nervous excitement that cocaine is likely to, when a large area is being anesthetized. We usually use one to two drams of a 5 per cent. solution according to the area of operation. Minor operations may be rendered almost bloodless by the injection of a

dram or so of adrenalin chloride at the same time that the local anesthetic is injected.

Nuclein.—The action of nuclein in producing a hyper leucocytosis and thereby giving a favorable action in inflammations, such as peritonitis, puerperal infections, etc., seems to be questioned. From what reports I have been able to get, and also from a personal standpoint, the general opinion seems to be that the value of nuclein has been somewhat overestimated.

Autogenic and Polyvalent Bacterins.—A comparison of the results with the use of bacterins seems to show that from a comparative standpoint the advantage lies with those prepared from the culture made from the discharges of the animal to be treated, namely, the autogenic bacterins. This is only natural, however, as we are certain that they contain the invading micro-organism.

Bismuth Paste.—The use of bismuth paste in the treatment of fistulous tracts and abscess cavities seems to be quite successful, and is growing in popularity with a number of veterinarians. The theory of its action aside from its antiseptic and astringent properties seems to be that the solid substance in the fistulous tract sort of displaces secretions by its own weight, and also acts as a frame-work for the formation of healthy granulations. After carefully drying the cavity with gauze, the paste is heated and injected with a syringe. The opening is then closed with gauze and the paste allowed to harden. The external opening usually heals in a few days, and the paste is absorbed, and the sinus obliterated by connective tissue.

Camphor.—I do not believe that the real value of camphor as a therapeutic agent is appreciated by the profession in general. All the great German therapists speak very highly of the value of this drug. Therapeutic doses of camphor stimulate the entire nervous system, especially the brain. It is also a heart stimulant, increasing blood pressure, as is evidenced by the color of the visible mucous membrane after its administration. Camphor is an antidote for any poisonous product which depresses the cerebro-spinal centers and the heart. It has also a marked antipyretic action and will even lower bodily temperature in

healthy animals. The German authors claim camphor to be specific in septic fevers, such as septicemia and pyemia; and personally I have observed excellent results following the use of camphor in these conditions. It may be used in these cases either internally or subcutaneously. As high as 100 to 250 c.c. of the spirits or oil of camphor may be administered subcutaneously in 24 hours.

Frohener recommends oil or spirits of camphor subcutaneously in contagious pleuro-pneumonia in doses of 50-150 c.c. Externally, camphor is valuable in treating mastitis, tendo-vaginitis, slowly granulating wounds, ulcers, fistulas, etc. In phlegmon spirits of camphor may be administered to horses in a bolus and subcutaneously as the spirits or oil of camphor.

In concluding my report, I wish to say that I firmly believe that success in therapeutic lines depends primarily upon accuracy of diagnosis. After diagnosis comes treatment, and the choice of medicinal agents is by no means simple, for here probably hangs the professional success of the practitioner. Lastly, the most reliable medicinal agents that the market affords are none too good for veterinary practice. For through the use of unstandardized preparations, or preparations of indefinite potency otherwise skillful treatment often fails.

CARRIES JOY AND GOOD CHEER TO THE MOUNTAIN TOPS: A subscriber up at Pike's Peak, Colo., in renewing his subscription, writes thus to the REVIEW: "Enclosed find check, etc., so that you can afford to come to the Pike's Peak region for another year, and believe me, it would be impossible for the writer to exist without you."

"ALL VETERINARY ASSOCIATIONS SHOULD ESTABLISH LECTURE BUREAUS," declared President Smith, of the V. M. A. of N. J., at the recent meeting of that association in Jersey City. This happy suggestion as a means of assisting the popular education movement under discussion at the moment, seemed to burst spontaneously from the lips of the presiding officer, and if generally accepted and acted upon will surely bear fruit.

TUMORS ENCOUNTERED IN VETERINARY PRACTICE.*

BY H. E. BEMIS, AMES, IOWA.

It is the intent of this paper to deal chiefly with the clinical aspect of the true tumors occurring in larger animals. This excludes tumor-like growths of inflammatory origin, such as granulomata, exostoses, etc. Tumors are of frequent occurrence in animals in this section of the country. Out of a clinic of twenty-seven hundred and fifty-nine surgical diseases, some form of true tumor constituted 27 per cent. of the cases. About one-fifth of this number were of the malignant variety.

Clinically we must distinguish between malignant and benign tumors. Malignancy is worked by rapidity of growth, the involvement of surrounding tissues, the tendency towards destructive degenerations, and the formation of metastases in distant parts of the body. Epitheliomas, sarcomas, and carcinomas constitute the malignant tumors.

Benign tumors are slower in growth, more regular in outline, remain more or less isolated from surrounding tissue, and are not apt to recur after removal.

Tumors as a class must be differentiated from other conditions causing enlargements in various parts of the body, notably hematomata, abscesses and hernias. Hematomata are recognized by their rapid development, smooth outline and freedom of overlying parts. Abscesses are marked by the presence of heat and pain, the characteristic heavy abscess wall around the periphery which may show fluctuation at various points. Hernias are usually reducible, in which case the diagnosis is easy. If strangulated so as to simulate a tumor in hardness, there will be general disturbance noticed.

Since we have several varieties of malignant tumors and still

* Presented to the Iowa Veterinary Association, Cedar Rapids, November, 1911.

more of the benign variety which differ markedly in respect to prognosis and treatment, it is of prime importance to be able to distinguish one form of tumor from another. Laboratory diagnosis is available only to those who are equipped and that only after operative removal of all or a part of the tumor has taken place.

In making a clinical diagnosis there are various valuable guides. First of all the location of the tumor is important. The eye, the penis and the mammary glands are most frequently affected with carcinomata, sarcomata and adenomata. From the above mentioned, eight of the tumors affected the eye, and of these four were carcinomas, and two sarcomas. The bones are most frequently affected with osteomata or sarcomata. In our experience all of the tumors affecting the bone have been osteomata. One appeared as smooth, rounded, the size of a goose egg outgrowth from the lower mandible, covered by the mucous membrane beneath the tongue. They commonly appear as pedunculated tumors from the lower border of the mandible. The skin and the mucous membrane of the nostril is the most common location for papillomata. Our clinic shows that fully half of all tumors encountered are of this variety. Occurring upon the skin, they may be found in most any region of the body. They may appear either as the organic greyish warts or verruca so common in calves, or as the soft vascular, cauliflower-like growths so commonly found in the skin of colts.

The papiloma of the mucous membrane appears as a spreading tumor from the mucous membrane of the usual passages, especially in young animals. They are flat upon the surface and elongated in the direction of the head. Their attachment is usually small and osseous in nature. Out of seventy-four tumors two have been of this variety. Both occurred in two-year-old colts. The subcutis is a common seat for the fibroma, lipoma and melaus sarcoma.

Again the size and rapidity of development are also important in making a differential diagnosis. Malignant tumors, especially sarcomata, are very rapid in growth; fibromata and lipomata

may become of great size, involving a whole region, while sarcomata and carcinomata are the most apt to develop by metastasis.

Third, the surface of the tumor is a further aid, it being rough, nodular, exposed and strawberry like in carcinomata and papillomata. Tipomata are lobulated, fluctuating, and may be pedunculated.

Fourth, the relation of the tumor to the surrounding tissues is of importance. Malignant tumors involve the overlying skin, bending it down to their irregular surface, or the tissues may become involved in degenerative changes. In some cases the species of animal and the color are valuable aids in making a diagnosis. Carcinomata are known to be more common in dogs and melano sarcomata in grey horses. Young animals are more apt to present tumors of the connective tissue types, such as sarcoma, osteoma and fibroma, while old animals more frequently develop epithelial tumors as carcinoma. Referring again to the clinic record the epithelial tumors have been represented by four carcinomas of the eye, one of the maxillary sinuses and two of the penis, all in mature animals, while papillomas, which are mixed tumors, osteomas, sarcomas and lipomas, have almost invariably appeared in animals up to five years of age. Swelling of the neighboring lymphatics indicates malignancy. To illustrate how these factors may be used in making a diagnosis, if one should find a rough nodular tumor or rapid growth upon some structure of the eye of an old horse with possible involvement of the subparotid lymphatics, a diagnosis of malignant tumor, probably carcinoma could safely be made. If he should find a tumor of similar appearance upon the skin of a young animal it would in all probability be a papilloma. The prognosis of tumors depends upon the nature of the tumor, and its extent and situation. Single benign tumors so situated that total extirpation is possible, usually yield readily to that treatment. In case of malignant tumors the success of the treatment depends quite largely upon early complete extirpation before its surrounding tissues become involved or metastasis established. In general, if the surround-

ing tissues are not involved, if there is no swelling of the lymph glands or if the part affected can be completely amputated without interfering with the tumor tissue, the prognosis of malignant tumors is favorable enough to warrant operation.

In our experience treatment of two carcinomas of the eye and one of the penis of the horse have resulted in complete recovery. In these cases total extirpation and amputation were practised. Treatment of a like number of carcinomas in the same regions resulted in rendering the animals useful for a year or more when in one case metastasis resulted without the original tumor recurring, while in the other two the tumor recurred, accompanied by metastasis and involvement of surrounding tissue when further operation became impossible, but even in these cases we considered the first operation justifiable as an otherwise useless animal was rendered useful for from one to three years. Tumors involving some structure of eye, or in the nasal passages or sinuses, are the most difficult to operate upon. For operations about the eye where extirpation of the eye itself was not necessary, we have found a small, sharp, hooked instrument very valuable. Guided by the finger, this can be carried to parts which cannot be exposed. Operating just clear of the tumor tissue it can be taken away entirely. Operations upon the nasal passages or sinuses should be preceded by tracheotomy, then the cavities should be liberally trephined, giving plenty of room for a thorough rapid operation upon the tumor. Following operation upon skin surfaces the actual cautery may be used to destroy any remaining particles of tumor tissue and to produce an eschar under which the tissues heal. Operative areas in mucous membranes may be penciled with silver nitrate or irrigated with a solution of silver nitrate 1-200.

"BIOLOGICAL PRODUCTS (VETERINARY)" is the title of an excellent article by Dr. Robert H. Wilson of the Research Laboratory of Parke, Davis & Co., Detroit, Mich., which will appear in our September number.

CLINICAL SYMPTOMS OF DOURINE.*

BY DR. A. H. QUIN, CRESTON, IA.

The object of this paper is to present the symptoms of dourine, as I found them in the field, and not to pose as an authority or bring forth anything that is new. My only aim and hope is to make the symptoms plain to you, that you may recognize a case, should you meet it in your practice.

I believe the symptoms may be presented to you in few words. It is generally considered that dourine is an infectious disease and, under natural conditions, is transmitted only by breeding, and is due to the *Trypanosoma Equiperdum*. Let us divide and describe the symptoms as: acute, subacute, and chronic. Of these, I believe the only cases you may hope to detect without a history are the acute and the chronic.

My first experience with this disease was in the spring of the present year, when I received a notice from Dr. Gibson to go to Taylor county and examine a stallion, reported by the township trustees as suffering from some venereal disease, which I diagnosed as dourine and which diagnosis was approved by Dr. Bauman in consultation and further approved by federal officers.

In this case the penis protruded and hung pendulent. It was swollen for probably four inches and a number of vesicles were presented near the glands. He had a number of well-marked plaques on the right side of his body that you could not help but detect. Here let me say the plaque is the symptom. When you see a plaque, rest assured you have a case of dourine, and I believe you are not sure of a case unless they *are* present, unless you have a history of infection.

I may add a little advice to the younger practitioners. When you are called to see a stallion suffering from venereal disease, always get as much history as possible.

* Read before the Iowa Veterinary Association, Cedar Rapids, November, 1911.

Go see some of the mares that have been served by the horse, before determining your diagnosis. This horse will answer for a typical acute case in a stallion.

In the mare the mucous membrane of the vagina will be inflamed and congested with probably an ulcer, although the ulcer has been almost entirely lacking in the outbreak. I think we have only found one mare that showed an ulcer in the acute stage of the disease.

This mare, known as the Cowell mare, was bred to the stallion Trotteur and afterward to the stallion Mack, who became infected from the service, affording us the opportunity of observing early symptoms of the disease. When I first noticed anything wrong with him, he would raise one hind leg and then the other and appear a little sore. Owner stated he had trimmed his feet too close. The next symptom was a slight oedema of the testicle and sheath and in a short time well marked plaques; then we knew we had him. This horse showed nicely on P. M.

The chronic form of the disease is easily detected when you have a history of infection. If there is no history, you may be kept guessing.

Perhaps an owner will call you and say the mare eats well, but was running down in flesh all the time. She is windy, tucked up in the flanks, and when taken out of the barn, knuckles over on the pasterns, appears lame in the stifle, acts very much like a mare that has made a poor recovery from azoturia. There may be some depigmentation about the vulva or udder. This symptom has been almost entirely lacking in our cases.

The subacute form is the stage which seems to give the most trouble. The mare will apparently be in good health. Owner claims she does not work well and he has noticed nothing wrong; but on examination you often find an increased amount of mucous in the vagina. In a great many cases it will have a yellowish cast and the walls of the vagina will be stained a copper color. This yellowish tinge I consider very diagnostic, as on P. M. we have found this yellow sediment in the bladder in almost every case. I have in mind a mare known as the Lydden mare; she

showed scarcely any other symptoms. The mare was old and had a jack on each hind leg; was in good condition. Owner said the mare had spells when she would fall off. When destroyed her womb showed as much or more than any. Ovaries had been ulcerated and contained calcareous deposits. Again, you may find a mare that is doing her work well, will trot limber, show nothing, except upper lip drawn to one side or lower lip may hang pendulous. Mares of this kind and exposed mares showing nothing are the dangerous ones and probably would infect a stallion.

The power of tolerance seems to vary greatly in mares. We can sum up the story in a very few words.

You must either have the plaques or a history of infection.

As I have before stated, the chronic form of dourine in the stallion is little different from the mare, with the exception of the œdema of the testicles and sheath and the later atrophy of the testicles.

As to the manner of control and eradication, we are following the rules settled by a conference of the state veterinarian with federal officers.

We first quarantine the stallion, get the stud book, and quarantine all mares, and would ask each owner the question: "Have you bred this mare to other stallions?" If such was the case, we quarantine the others, also all mares bred after this service. Then we examine all stallions in the infected district and check over their books. All mares known to have the disease have been purchased by the government and destroyed.

THE article on *Tuberculo-Infection of Man Through Animals and Animal Products*, on page 545 of this issue, by A. O. Zwick, Ph. G., M. D., merits careful reading. The author has given much time to the study of tuberculosis in man and in animals both at home and abroad. During the last international congress on tuberculosis he acted as interpreter for the immortal Koch.

FOOT AND MOUTH DISEASE.

By J. E. AGHION, V.S., VETERINARIAN STATE DOMAINS, SAKHA, EGYPT.

In presenting to your readers this short paper on foot and mouth disease, I do not profess to offer anything new, either on the pathology of the disease or its treatment. My object being to clear up a point which was on my mind for some time, and consequently may profitably ask, Why is foot and mouth disease so fatal in many countries in Central Europe, Asia, America and not at all in this country (Egypt), while the pathology, etiology and probably the period of incubation are the same?

Is it the climatic condition of the country that favors our cattle with the benign form of the disease or has idiosyncrasy anything to do with it?

Whatever the cause may be: I will just mention here that my personal experience leads me to believe that the Egyptian cattle, either through climatic condition, atmospheric influence or idiosyncrasy do enjoy the benign form of the disease. Now to elucidate this point I will try to describe the disease in a general way as seen here by the writer and others who had the occasion of observing it in many outbreaks.

Foot and mouth disease is also known by many other names which are no doubt familiar to all. It is a highly contagious and infectious fever of an acute specific nature, characterized by a vesicular eruption affecting the lips, tongue, roof of the mouth, around the coronets of the feet and between the toes.

The disease affects cattle, sheep, pigs, etc., and, according to some observers, it also attacks horses, mules, dogs, poultry and even human beings are susceptible to it.

On this point allow me to direct the attention of the readers to the fact that contrary to this statement, which may carry a good authority, I may say that I have never seen the disease to attack

horses, mules, nor dogs and though these animals were seen in direct contact with cattle affected with foot and mouth disease.

In order to decide and make sure of this point an experiment was carried out in the following manner:

Two horses, two mules, three native dogs and four head of cattle were subjected to a direct inoculation of the virus; the buccal mucous membrane and gums were scarified with a bistoury, and a bit of cotton saturated with the saliva and liquid serous of pustules of the infected cattle was rubbed vigorously to the parts; these animals were kept separately in an isolated pasture and daily inspected. None responded to the test, except the (four) cattle, which gave a positive reaction, one in forty-eight hours and the other three in five days, from the day the inoculation was applied. One of the dogs showed a slight uneasiness the second day from the inoculation (was dull and refused food), but got well soon afterwards. Now from the result of the above experiment, besides the observation of many others, one may feel confident in concluding that horses, mules and dogs are not susceptible to foot and mouth disease (at least in this country).

The period of incubation varies from thirty-six hours to four days and even more. Animals do not become immune after once having the disease. *The leading symptoms* are: The rise in the temperature, dryness of the muzzle, and an eruption appearing inside the lips, on the roof of the mouth and tongue. The eruption soon breaks, giving rise to ulcers and blisters. While this process is going on the mouth becomes sore and the animal shows difficulty in taking food, and mastication may then cease. Small blisters also make their appearance in the interdigital space and coronets of the feet, causing great pain and severe lameness; in bad cases separation of the hoof takes place; this is specially true in wet and cold weather. Animals in this condition take a long time to recover. In dry weather, the ulcers on the feet rarely occur.

The Treatment.—Ordinary cases of foot and mouth disease require very little medical treatment; it is a disease that runs a definite course and generally terminates favorably. Nursing is

practically all that is required. The first and by all means the most important step to be taken is to place the animal in a dry, well-ventilated stable or shed; plenty of pure cold water should be allowed; if temperature is high a dose of potassium nitrate should be dissolved in the drinking water; this may act as a febrifuge, and at the same time as a splendid mouth wash, soothing the aphthous eruptions and ulcerations in the mouth. The food should be soft and easy to masticate; green food is highly recommended. When suppuration with separation of some part of the hoof takes place the detached parts should be gently removed and the ulcers washed with a mild astringent or antiseptic solution and carefully dressed with some tow. The following powder was also tried with a fair amount of success.

Take of each cup. sulph. and pulv. charcoal, one ounce; chin-sol, two drams.

Under this simple treatment the fever subsides, the ulcers heal up nicely and the animal recovers and even may be put to work in fifteen or twenty days' time.

PRESIDENT BERNS, of the Veterinary Medical Association of New York City, appointed as delegates to the American Veterinary Medical Association at Indianapolis, Drs. E. B. Ackerman, D. W. Cochran and R. S. MacKellar.

HORSES IN THE TROPICS.—According to the observations of Lieutenant Colonel Charles E. Woodruff, chief surgeon of the western division of the army, gray and white horses live much longer in the tropics than darker colored horses. Almost the only ones that survive ordinary ailments in Manila are said to be white, gray, roan and light yellow. Among these the white horses predominate. Of one hundred Chinese mules bought for the Philippine constabulary in 1903 only four lived more than seven years, and these had milk white hair and jet black skin. Only mules of such a kind will be bought in future. Colonel Woodruff says: "There is some unknown relation between color and nervousness. On review, the gray troop horse is actually phlegmatic, the sorrel quiet and the bays excitable and restless. Although, like all colors, black horses are sometimes quiet, they are believed to be the most excitable of all."—(*Youth's Companion* and *New York Tribune*.)

REPORTS OF CASES.

HERNIA.*

By DR. D. P. MALCOM, New Hampton, Ia.

In bringing this division of surgery before this meeting, it is not with the idea of enumerating the different kinds of hernias that may be found in the various domesticated animals, much less the various ways of operating. I will, therefore, confine my remarks to umbilical, inguinal and scrotal hernia, including the ways I operate.

Umbilical hernia is congenital or acquired and is seen either at birth or very soon after, rarely happening in adult life. The tumor formed in this region is occasionally very large and is of semi-globular shape, soft and elastic to the touch. It consists of a sack, the wall of which is composed of skin and parietal peritoneum which contains a portion of intestine or omentum, or both.

Inguinal and scrotal hernia is the protrusion of the omentum or a loop of the intestine or both. In many cases there is a hereditary predisposition, particularly in the equine species, and in some cases it is undoubtedly congenital. It is very often developed or increased by severe exertion. The method I have adopted for the operation of umbilical hernia is very simple and has in my practice proved safe and successful. The mode of procedure consists in securing the animal in the usual way as for castration. I use a clamp of my own design, which is made of two pieces of spring steel, one and one-fourth inches wide and ten inches long with two slots in each section of the clamp one-fourth inches wide and eight inches long, with a bolt and thumb screw at each end, one bolt being stationary and the other works on a hinge. The clamp is set on the hernia in the usual way, being careful to have the hernia sack inclosed; the thumb screws are now set tight to hold the clamp in place. I have two straight needles and a suture of No. 12 silk braid. Thread both needles with the same thread, then tie the ends of the thread together,

* Presented to the Iowa Veterinary Association, Cedar Rapids, November, 1911.

draw the needles so that the knot will be midway between the needles when the thread is stretched out. Then proceed to sew by passing the needle through the lower slot in the clamp, anterior or posterior as the case may be. Then pass both needles through the hernia sack, using the harness tug stitch, then put one thread around the needle, so as to make a surgeon's knot. Continue in this manner until you have reached the other end of the hernia sack or slot, taking about one inch to each stitch. Remove the clamp, paint the parts with iodine and leave the hernia sack to slough off, which will take eight or twelve days.

In inguinal and scrotal hernia, in a stallion, secure the animal, make an incision in the scrotum, cutting through the skin and dartos in the middle line of the testicle; draw the skin downwards and cause the testicle and its coverings to bulge. Now cut through the connective tissue and the cremasteric aponeurosis; this leaves the tunica vaginalis exposed, which must be left intact. Take the testicle, which is covered by the peritoneal sack, and by pressure break down the connective tissue that binds it to the scrotum until it is isolated as high as the inguinal ring. Be sure that the hernia is completely reduced, then place the clamp over the hernia sack as near the ring as possible, tighten thumb screws and proceed to sew, using the same kind of a stitch as used in umbilical hernia, except making the stitches shorter and use a single thread. When through, leave the thread long enough to reach through the opening in the skin. This being done, then remove the testicle and hernia sack by cutting through the slot in the clamp above the one you sew through (which should be below if the horse was on his feet); now, release the clamp and pack the inguinal canal, take a stitch or two in the skin and leave this packing in twenty-four hours. Be sure when the pack is taken out that the end of the thread is long enough to reach through the external opening so that it can be taken out when the stitches slough off.

I kept a record of a few cases that were operated on by the foregoing method which I will briefly mention. *Case No. 1* was a draft stallion four years old, with scrotal hernia.

History.—Left side of scrotum was considerably larger than right side at birth. At two years old the right side was as large as the left. The owner then disposed of him. The buyer used him in the stud, when the left side gradually enlarged until it hung as low down as the hock, with a diameter of about eight or ten inches. This case was what prompted me to use some device other than the common clamp, as it was a question as to whether

the clamp alone would bring around the desired result. On casting the patient, I discovered that instead of a single hernia I was confronted with a double hernia, therefore, operating on both sides, using the above described method. The stitches sloughed off the twelfth day and in six weeks the horse was put to work and today is as smooth as any gelding that was castrated at four years old. This operation was performed November 21, 1910.

Case No. 2 was a one-year-old draft colt, had scrotal hernia on left side. Hernia was first noticed by owner when colt was one week old. When operated on the hernia tumor was as large as a two-quart bowl. The same method was used. The stitches sloughed off in five days and parts completely healed in six weeks.

Case No. 3 was a trotting bred colt one year old, with umbilical hernia. Tumor was about six inches in diameter, opening in abdominal wall about four inches long and two inches wide. Was operated on as above described. Did not see the colt again for three months and did not learn from the owner how long before the hernia sack sloughed off, as he turned the colt to pasture the third day after the operation and did not see it for three weeks, and then the wound was nearly healed.

Case No. 4 was a draft colt, seven months old, with umbilical hernia, with a tumor the size of a coffee cup. The owner said the colt would have colic pains and roll and said that he would press the bowel back and the colt would be all right. Operated on November 7, 1911, and hernia sloughed off November 19, and saw colt on November 20 and the wound was almost healed.

The advantage of this method of operating, especially in umbilical hernia, is that the patient can be turned on pasture without any fear of trouble.

ECLAMPSIA IN THE MARE.

By FRANK T. KENELEY, Twin Falls, Idaho.

I may first state that before reading W. L. Williams' *Veterinary Obstetrics*, I was unaware that we had an eclampsia in the mare. In this work the author says that so far as he knew the first description of this disease was a paper presented by himself before the Illinois Veterinary Medical Association, and which later appeared in the *AMERICAN VETERINARY REVIEW*, Vol. 14, page 559. His description of several cases in which he was able to watch their course throughout gives a very broad account of this disease from a diagnostic point.

History.—This mare was of a large draft type, about nine years old, and had foaled in the pasturage some thirty-six hours before, and when found in the morning she showed no evidence of having had a difficult labor and the colt was up nursing; she was caught-up and put in a large box stall and allowed to run in a small lot when she chose; she was allowed an abundance of hay, also a light grain ration. Both mare and colt seemed to be doing well up to this time and the owner had gone in to feed her as usual about six o'clock; when he left she was eating, but on returning about an hour later he found her getting up and down covered with sweat and having repeated spasms all over her body; and when he 'phoned me he was very anxious that I should "come right away."

Symptoms.—When I arrived an hour later the aggravated symptoms with which the disease had been ushered in, had somewhat abated, and she was in a recumbent position and did not seem to be suffering much pain; the sweating had also ceased, but she had only partly dried off and the body was cold. Her expression was anxious and painful, the mucous membranes were only slightly injected, pulse fast and weak, temperature normal, respiration only slightly above normal; she would put her head around to her side as though suffering some abdominal pain, when down she would lie in a recumbent position. She remained in this condition for about an hour, during which time, only slight spasms were noticed, principally about the head, neck and flank, but in about forty minutes she became quite restless and commenced to sweat freely, getting up and down and had rather violent spasms; these symptoms continued until she was relieved by the following mixture in medium sized doses: Belladonna, hoscyanus and canabus indica. When relief was apparent the mixture was discontinued; but in this case, after the treatment was discontinued for a few hours, the symptoms developed again, but would subside after a few doses of the above mixture was given. And this continued for the three following days, after which the mare regained her normal condition. During this time she consumed considerable of the above drugs. I am not offering this case as something new, but I am quite sure I have lost a few mares with this disease by not knowing what it was, and perhaps others have, too. The above treatment is the one recommended by Prof. Williams, excepting that the hoscyanus was not included in his treatment.

A CASE OF SARCOPTIC MANGE IN THE HOG.

By B. F. KAUFF, Prof. of Path. Div. Vet. Sci. Colo. Agri. College and Pathologist to the Colo. Agri. Experiment Station.

While various skin diseases are common among hogs, as eczemas, urticarias, dermatitis in various stages (some of which somewhat simulate mange, of the sarcoptic variety, but upon microscopic examination are found to be a dermatitis), also follicular mange, yet sarcoptic scabies among hogs, in the experience of the writer, has been very rare.

The following interesting report came to this laboratory along with some specimens sent by a California veterinarian, for classification. Only one hog of a herd of about 200 was reported to have been infested. Through what channel this one became in-



Sarcoptes Scabiei Variety *Suis*.—Female.

fested could not be definitely determined. Thick, scabby scales or crusts involved the face, ears and back as far as the loins. Large scales which clustered in bunches, hung as low down as the elbows. The outer scales were very hard and covered with dirt. A knife was used to cut off some of the larger scales. From the under surface of these specimens the parasites were found. The cut here reproduced is from a photomicrograph of one of the females.

SECRETARY LOBLEIN's ambition to make the 1912 mid-summer convention of New Jersey veterinarians a "banner meeting" has been fully realized, as at its close some of the oldest members stood up and enthusiastically declared it "the best meeting in the history of the association."

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

DIFFICULT CASE OF PARTURITION IN A CLYDESDALE MARE [*Henry Thompson, M.R.C.V.S.*].—Twenty-year-old pregnant mare, seventeen days overdue of her usual time, had a very difficult delivery. The foal presented itself with both hocks pressing on the brim of the pelvis and when after considerable work the hind legs were secured and put in good position, it was found that the head was bent over the leg and again the delivery arrested, until this was straightened on the neck and finally the foal was extracted. It took one hour and forty minutes to complete the delivery. The mare rallied wonderfully, but finally died 50 hours after the operation. The following measurements and weight of the foal are given as a record to any ever published: Length from poll to head of the tail, 50 inches; round the girth, $33\frac{1}{2}$; length of head from poll to the nose, 18; from withers to the foot, 44; from hip to foot, 40; round stifle joint, $22\frac{1}{2}$; round hind shank, 6; round fore shank, $5\frac{1}{2}$. Weight, 156 pounds.—(*Vet. Record.*)

CASTOR OIL BEAN POISONING [*Thomas Parker, F.R.C.V.S.*]. Alarming outbreak of disease among swine is reported and the author investigated. Out of 52 swine on the premises, three sows and three store pigs were ill, one boar, one sow and three small store pigs had died. The symptoms observed were: Off food, lying down, disinclined to move, crouching under the bedding, somewhat tucked up in the abdomen, abdominal pains, ears drawn back, surface of the body almost cold. *Post mortem*: Hemorrhagic gastroenteritis with large clots of blood in small intestine. Mesenteric lymphatic glands highly congested. Analysis of the meal used to feed the pigs was shown to contain a large quantity of crushed castor oil beans, to which there was but little doubt the death of the pigs was due.—(*Vet. Record.*)

PARALYSIS OF THE LARGE INTESTINES WITH PASSIVE IMPACTION [*J. Willett, M.R.C.V.S.*].—Bay van gelding five years

old, recently purchased, has been ailing, and for ten days received twice a day a mixture in which entered half an ounce of tincture opii. Since six days she has passed no fœces. When seen she appeared comfortable, coat glossy, no pain, eating. Pulse 50, temperature 99, 2 F. conjunctiva bilious, no peristalsis, rectum empty and dry, colon distended with hard mass. The treatment consisted of aloetic purgative, soap-water injections, eserine, chloride of barium, linseed oil, strychnine. Almost no result was obtained except towards the 15th day of the treatment when considerable pain was exhibited for the first time and a large quantity of fœces was expelled. From that on, recovery followed. No bad effects were noticed from the frequent use of chloride of barium, which was given in small doses.—(*Vet. Journ.*)

TETANUS TREATED WITH ANTITETANIC SERUM AND HYPODERMIC INJECTIONS OF SULPHATE OF MAGNESIUM—RECOVERY [*George Heslop, L.V.S.*].—Injured by barbed wire, this four-year-old mare developed tetanus. She received the first day 60 c.c. of Parke, Davis & Co.'s anti-tetanic serum intravenously, and on one side of the neck 1½ ounce of a 15 per cent. sterile magnesium solution, injected hypodermically. Those were repeated six hours later. On the second day the same injections were renewed, and also on the third day. On the fourth, fifth and sixth days the doses were reduced to 40 c.c. of serum and 1 ounce of magnesium, repeated twice. On the seventh, another reduction to 30 c.c. of serum and no magnesium. On the eighth day, same thing and on the ninth all treatment was stopped, the animal eating well and entering into convalescence. Improvement was gradual after the fifth day. Chloral hydrate, dark stall, quietness formed also essential parts of the treatment. One quite large abscess formed on the neck resulting from the injection of magnesium.—(*Vet. Journ.*)

TRUE HEMORRHOIDS IN HORSE [*Prof. F. Hobday, F.R.C.V.S. and Guy Sutton, F.R.C.V.S.*].—For the past five months the driver of this thirteen-year-old coach horse has noticed that the animal showed acute irritation of the rectum after defecation and now when an action of the bowels takes place, a large and objectionable swelling as big as an ordinary orange is seen protruding for some few minutes from the anus. Examination per rectum revealed a large cluster of congested and dilated veins, just within the anus. Under the influence of cocaine, a Chinese

silk ligature was placed round the base and after three days the removal was completed by excision.—(*Vet Journ.*)

VERY BAD CASE OF PROLAPSUS OF THE VAGINA AND RECTUM OF A HEIFER—IS IT HEREDITARY? [*Prof. Fred Hobday, F.R.C.V.S.*].—Four-year-old valuable shorthorn had first a prolapsus of the vagina. It was returned in place. On the third day it had come back and complicated with one of the rectum. This could be reduced, but amputation of the vaginal protuberance was the only chance of relief. This was done, but the cow strained so much after, that the intestines were forced out and the cow was destroyed. Prof. Hobday adds in his record: "I should like to hear whether any readers of the *Journal* have had instances of heredity of this serious ailment," as the owner of the cow has written a letter stating that in the family of this animal other cases had been noticed.—(*Vet. Journ.*)

THREE CASES OF PROLAPSUS ANI IN DOGS [*H. C. Ganguly, G.V.R.C.*].—The concise story of three cases in pups when the prolapsus measured in length 5 inches, three inches and one foot. The treatment consisted in careful disinfection, the introduction of a gum elastic rod of about half an inch diameter, lubricated with cocoa-nut oil introduced in the rectum and the everted portion of the organ returned gently with the aid of the fingers and the rod.

This last was then withdrawn and 10 ounces of about 2 c.c. solution of liquor opii injected in the rectum. Laxative diet was prescribed. The three animals made rapid recovery.—(*Ibid.*)

INTERESTING CASE OF INGUINAL HERNIA [*Henry Taylor, F.R.C.V.S.*].—Operated successfully once for inguinal hernia of the left side, a prize bitch, shortly after has one on the opposite side for which she is to be operated. But this time when the hernial sac was cut down upon, the contents could not be returned as the sac had an unusual shape. "It bifurcated after passing through the inguinal canal, one part lying almost behind it and the other passing directly forward for about three inches. The skin incision having been enlarged, the contents were returned after some time and a catgut ligature tied round the sac at its base. As the skin was about to be sewn, the uterus with a large portion of the omentum slipped out through the umbilical ring, the ligature round the base of the sac having slipped off.

The reduction of these prolapsed organs was rather difficult. The ring was then sutured with catgut and then the muscles and outside structures. No peritonitis or suppuration followed and recovery was complete.—(*Vet Journ.*)

IRRIGATION OF JOINT CAVITY [*J. B. Collyer, M.R.C.V.S.*].—A chestnut gelding received a contused wound over the orbital arch and wing of the atlas. On the following day synovial discharge took place. Treated with oil of clover and zinc ointment it kept up for several days, when it then became purulent and mixed with blood. Probing revealed a pouch which was freely open and then irrigation of solution of tincture of iodine 1 in 20 was injected twice a day. After some little time improvement set in in the flow of the synovial discharge, but while the condition was mending it was noticed that the movements of the jaws were limited and the lateral motion of the lower jaw also became difficult. The animal was then left to himself; turned out he was left to grass for some time and finally the motion of the jaws having resumed their freedom, the horse ate well, grew fat, and was sent to work. He had been laid up six months.—(*Vet. Record.*)

EARLY USE OF THE KNIFE IN PARTURITION CASES IN MARES [*Alec McTurk, M.R.C.V.S.*].—For the writer, the use of the knife in difficult cases of foaling ought to be resorted to "without any hesitation if after ten or fifteen minutes' work the foetus cannot be got into proper position." The use of the block and pulleys, the barbarous method of yoking a horse to the foal, are gross cruelty and neither more nor less than murder of the unfortunate mother. He then records a few cases of dystokia in which by the early amputation of one leg he has been able to remove foals comparatively easily and in all cases save the mare, the mother, which was a great satisfaction to the owner, and whose death would not have served to the reputation of the accoucheur. The average time taken to effect the delivery in the cases recorded was about one and a half hours. Recovery in all was uninterrupted, except in one case where a mild attack of laminitis developed. The writer does not advocate haphazard use of the knife, but believes that in many cases the mare dies when she could have been saved.—(*Vet. Record.*)

STRANGLES WITH POST-PHARYNGEAL ABSCESS [*C. C. H. Jolliffe, F.R.C.V.S.*].—The history of protracted case which

lasted from the end of December to the end of the following April. Four-year-old black mare had first small sub-maxillary abscess. Then another of the submaxillary glands. Swelling of that region, of the laryngeal and parotid of both sides followed. Oedema of the face, mouth and lips takes place and the four extremities are also swollen. Dyspnea takes place and is relieved by incision of an abscess on the right side. One pint of pus escapes. A large vein was divided and plugging of the cavity necessary. Another incision opens a large abscess on the left side. The cavities of these two abscesses communicate. The condition then began to improve, but while the closing of the cavities goes on, the discharge continues. Consultation is taken. There is much swelling yet, small sinus-like suppurating on each side of the throat, the discharge is more or less abundant. Post pharyngeal abscess is diagnosed. The mare is cast, the suppurating channels are both enlarged and the post-pharyngeal abscess situated between the back of the pharynx and the cervical vertebræ is revealed. It is freely opened as high as possible, carefully avoiding the surrounding blood vessels, and after flooding it out clean, the cavity is dressed with cyanide gauze. No trouble followed the operation, and the mare with careful anti-septic attendance finally made a good recovery.—(*Vet. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

HERNIA OF THE CUTANEOUS COVERING OF THE PENIS IN BULLS [*M. A. Davie*].—This condition is important when observed in animals used for breeding purposes.

1. *Observation*.—A bull, immediately after covering, presented at the external orifice of the sheath, a membranous prolongation-making hernia and looking backwards. It is rounded, measures 10 centimeters in length, is reddish in color and at its anterior portion forms a curve projecting at the entrance of the sheath. At its free extremity there is an opening through which urine dribbles. The penis cannot come out. The membrane is the skin everted which lines the external face of the penis. The hernia is reduced and kept in place by a bandage supporting an astringent and aseptic compress. No further trouble. The animal resumes its functions.

2. *Observation.*—This case is more serious. The tumefaction was observed when it had been present since several days. The tumor is as big as the fist and covered with pus and adhering substances. It is oblong and presents at its upper end a circular cord preventing its return into the sheath. The urine escapes as in the preceding case. After thorough cleaning, the irritated membrane was returned in its position and astringent and antiseptic treatment prescribed. But notwithstanding the care, the relief was not complete, as after a few days the bull had an erection and the projection of the skin returned and required a long time to recede. The bull could no longer be safely used for breeding and was fattened for the butcher.

TREATMENT OF HEMOGLOBINURIA [*Mr. Lacombe*].—This is the record of the good results obtained by the author in two cases of azoturia. In one the recovery might have taken place with the ordinary classical treatment, but in the second the animal was considered as lost. The treatment consisted in the subcutaneous insufflation of sterilized air by the method of Brunswick. To the first horse about two litres were injected in the triceps region. In the second between 8 and 10 litres were pushed round the stifle and back of the shoulder. The swelling due to the inflated air lasted for some fifteen days before it disappeared. The recovery in the last horse was as rapid as it sometimes occurs in parturient apoplexy of cows. The animal got up a few hours after the injection. In both horses, however, bleeding at the jugular and laxatives had also been prescribed.—(*Bull. de la Soc. Cent.*)

SEPTIC PERITONITIS DUE TO FOREIGN BODY OF THE RETICULUM IN A COW [*Mr. Pierre Bitard*].—Nine-year-old cow recently purchased, although she has all the signs of health, moans repeatedly. About a month ago she shows stiffness in walking and her moanings are louder and more frequent. A swelling develops at the lower part of the left side of the chest, an abscess follows, ulcerates, discharges bloody pus, having very bad odor, and the owner, squeezing it, extracts a long knitting needle which from the reticulum had made its way out. This abscess gets well in due time and the cow seemed to be in perfect health, except that her abdomen looked rather larger, but without tympanitis. Suddenly the appetite gave away, rumination stops and there is no defecation. The animal lays on right sternal decubitus, respiration is slow with painful expiration, the abdo-

men is very large. By auscultation, the vermicular motions of the rumen are found absent, the peristalsis of the intestine is also wanting. The rumen yet contains some food unpacked. The countenance of the cow is good, eyes widely open, no nasal discharge, nose moist. Temperature 37. Veratrine and arecoline are ordered, as the case is considered as one of gastro-intestinal trouble, the history of the extraction of the needle not being known. At first the animal seemed to show some improvement. The appetite returned. But after two days a change took place for the worse and the animal died. At the post mortem were found all the characteristic lesions of septic peritonitis, and besides, on the right side of the pelvis, on the base of the tail, at the posterior portion of the ischiatic ligament, there was an enormous swelling pushing against the vulva and the rectum. The skin was normal and when incised there escaped an enormous quantity of sanious, greyish, grumelous pus, having a very offensive odor. The large diverticulum communicated with the abdomen.—(*Prog. Veter.*)

LABARRAQUE SOLUTION—INTESTINAL AND SURGICAL ANTI-SEPTIC [*A. Querruan, Army Veterinarian*].—This old preparation of chloride of soda has lately been recommended for its properties and its actions in purulent ophtahlmy, pseudo-membraneous affections and also as a powerful antiseptic. In veterinary medicine, it has been given internally in colic and for free washings of the intestines in solution of 12 grams for 1000 for large animals, repeated two or three times a day. The author records a few cases where the effects have been very surprising. A case of suppurative arthritis of the left fore fetlock was cured in fifteen days by baths with Labarraque solution (18 p. 1000) renewed for half an hour three times a day. A deep punctured wound of the foot with suppurating synovial discharge, a suppurative synovitis of the tarsal sheath, one of the left hock, another where autoplasmic treatment of both knees was complicated with hematomas and enormous swelling of the forearms, are described and all terminated with very advantageous recoveries. The author concludes in saying that this old remedy is a cheap powerful antiseptic, easily handled and useful for numerous applications in veterinary medicine. It can be used as rectal douches for intestinal antisepsy, against fibrinous exudates of mucous and serous membranes and also in synovial affections.—(*Rec. de Med. Vet.*)

BIER'S METHOD IN CATTLE PRACTICE—SUPPURATIVE ARTHRITIS OF THE FETLOCK [*Mr. L. Paris*].—Six-months-old heifer had deep wound of the right fore fetlock. There is a large granulating mass as big as a large nut and in its center a fistulous opening from which escapes purulent synovia. The proud fleshy tumour was excised and the wound dressed with brandy and boric acid, a rubber band was applied every day for two hours in the middle of the metacarpal region and tied so that the finger could freely be passed under it. On the fifth application the synovia stopped running, in a week after the animal stood well on its leg, all discharge had stopped and recovery followed without event.—(*Ibid.*)

DEEP WOUND OF THE RIGHT ORBIT AND FRONTAL SINUS [*Mr. Floriot, Army Veterinarian*].—A six-year-old mare had the hook, which supports the swinging bar separating her from the stall next to her, entered in her right orbit. Relieved with great difficulty, it was found that the eye is almost entirely enucleated and that there is a fracture above the orbit of the frontal bone, the sinus being open. The globe of the eye was removed and an opening was then detected establishing a direct communication with the frontal sinus and the orbit. The frontal plate was trephined to allow the introduction of a drain. Suppuration of good nature took place, after a few days with repeated injections of peroxide. Gradually the wound closed and the recovery was without complication except the return of a slight collection in the sinus which required another trephining to give escape to a certain amount of suppuration.—(*Ibid.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

HYDRONEPHROSIS CAUSED BY VESICAL CANCER IN A DOG [*Prof. E. Huynen*].—This occurred in a six-year-old dog, with the history that he has slowly lost flesh and at intervals has passed bloody urine. The general condition is bad, the animal is very thin, is indifferent to all external surroundings. Respiration is normal. Pulse strong and accelerated. Mucous membranes pale. Cardiac sounds normal. Appetite bad, no vomiting, feces normal. Micturition frequent and painful and in small quantity. Urine is darkish, strongly ammoniacal and alkaline. It contains albumin. It leaves a deposit of white corpuscles, desquamated

cells from the bladder, various microbes and no red globules. Through the rectum the prostate is normal. Abdominal palpation reveals the presence of a hard mass, as big as an egg, movable, and situated on the limit of abdominal cavity and anterior straight of the pelvis. This mass forms part of the bladder and to establish a diagnosis of its being a calculus or a vesical tumor, laparotomy is performed. The bladder is thus exposed, its size is normal, but it is the seat of a tumor spread over the two anterior thirds of the vesical wall. Interference is unnecessary, the dog was destroyed. At the postmortem, the vesical tumor was found occupying the anterior extremity of the bladder and spreading on its superior face as far as the vesical trigone; and the histological examination classified it as a primitive cancer of the bladder. Both ureters run through the tumor, the left having the urine pass quite easily, while the right is completely obliterated. This is also largely distended and as big as one finger. The right kidney is three times its ordinary size, its surface is smooth and whitish. Incised, a yellowish, sticky fluid escapes. The walls of that kidney are but three millimeters thick.—(*Annal. de Med. Vet. Bruxelles.*)

FOREIGN BODY IN THE ŒSOPHAGUS—ŒDEMA OF THE HEAD IN A DOG [*Mr. Gaucet*].—Three-months-old collie has a swelling of the entire head, which takes place suddenly. The eyelids are œdematous, and the eyes seem sunken in their orbits. While being examined the animal is taken with a violent spell of coughing, followed by strong efforts for vomiting, but without results. The mouth and pharynx are then carefully examined, but nothing abnormal is found. Same result with palpation on the œsophagus and the abdomen. A subcutaneous injection of apomorphine is made and is followed by the expulsion of a rubber ball partially broken in two. The cough and attempts to vomit ceased at once. The next day the swelling of the eyelids and head had entirely subsided. It is probable that the ball arrested in the œsophagus at the anterior part of its intra-thoracic course, had produced pressure on the jugulars and caused by serous transudation the swelling of the parts situated forward of the point of pressure.—(*Annales de Bruxelles.*)

SIMPLE SPASMODIC TABES IN A FILLY [*H. R. Bredo*].—Heavy draught filly, aged only a few days, has been well since her birth, when some ten days after she was found lying down and unable to get up unless she is helped. Then it is observed

that she does not rest on her left hind leg. Two days after it is the right which is also kept in extension as if dislocation of the patella was present. The general condition is otherwise good and the functions are normal. The muscles of the back, of the thighs and shanks are hard. Pricks with needle give rise to violent struggles, the tendinous reflexes are exaggerated. The left leg is sometimes spasmodically carried in adduction and then forcibly backwards. Passive motions give rise to violent reactions resembling epileptoid trepidations of the disease of Jackson. Diagnosis was made by the writer by comparing the symptoms to those observed in children and described as the spinal form of the disease of Little. The treatment consisted in stimulating frictions three times a day over the loins, thighs and shanks. Passive motions five times a day of all the joints of the legs affected. Iodide of potassium internally. After the seventh day of this treatment, improvement begins to be observed and after two weeks convalescence was well marked. Unfortunately as recovery was gradually progressing the little animal took bronchopneumonia and died with it.—(*Bull. Med. Vet. Prat.*)

ALFALFA SUITABLE FOR BROOD MARES.—Last year we had much discussion as to whether alfalfa hay or pasture influenced the fecundity of mares. The general impression in the west seems to be that it does have an influence in an unfavorable way. George Wright of Argentina on the other hand reports pasturing a large number of mares exclusively on alfalfa pasture, with a very large percentage of foals resulting. Our own large draft mares had alfalfa practically every day of the past year, and yet we have a large percentage of colts born and coming, all strong and fine thus far. I yet think one could feed too much alfalfa to mares, for it is a rich feed; but let no man hesitate to sow the crop for fear he cannot get colts, if he uses it in moderation.

We have been careful that all our foals were born out on clean grass pasture. We also have disinfected the navels, so we have had no navel trouble this year. It is hard to save a colt born in a stable reeking with germs. Dr. Simpson, a veterinarian of Indiana, dropped me a hint recently. He says the straw on which a colt may lie, if it is to be born in the stable, should be sunned for days before it is brought in for bedding. That looks sensible. (JOSEPH E. WING, in *Breeder's Gazette.*)

BREEDING PROBLEMS.

BREEDING PROBLEMS AND THE ARMY.

By OLAF SCHWARZKOPF, Fort Sam Houston, Texas.

The "Remount question," which suddenly appeared and seriously threatened the army a few years ago, has gradually developed into the problem how to breed suitable cavalry horses in our country. Both questions have been arousing such widespread interest, and they have led to so diverse discussions in army service journals and agricultural papers, that they have become of the deepest concern to the army veterinarian, and must need also the attention of all veterinarians practicing in horse-breeding districts.

It is the birthright of our people and the tendency of our government to meet emergencies by sporadic and spasmodic efforts, and these two problems are no exception, inasmuch as they were allowed to come upon us abruptly and are now in danger of being met with hastily.

Credit is due to the army veterinarian, that he was the first to foresee the unavoidable shortage of suitable remounts for our cavalry, little as this is known. It was more than fifteen years ago when some of our colleagues in the service, now dead, as well as others still living, sounded an early warning, but this remained unheeded by the war department and the horse-breeders generally.

Things had to come the way they did. In the nineties horse-breeding, helter-skelter, uncontrolled, unguided or misguided horse-breeding, all were irrational, produced an oversupply of horses of inferior quality, which resulted in the dropping of prices so low that they became practically worthless. Veterinarians then practicing well remember that a charge of two dollars for a visit to a sick horse was considered exorbitant, the owner estimating the value of his \$250 horse at about \$25, and he preferred to let him die rather than pay such a fee. People in many sections of the country did not know what to do with all the horses, and thousands were butchered, ostensibly for export, while other thousands were simply shot in the prairies to preserve the grass for cattle and sheep, or the carcasses were fed to hogs.

It was an extreme that had been reached, and when the reaction set in, the pendulum swung towards the other extreme:

The abandonment of breeding of the American lightweight, quick-moving, enduring horse, particularly of those strains suitable for riding purposes. About the same time the Spanish-American war, the Philippine war and the South African war nearly took the rest of this kind of horses out of the country, never to return, and numbers of valuable breeding mares and stallions, entirely suitable to produce fair cavalry horses, were eagerly bought up by foreign buyers at the low figures quoted. All this short-sighted, almost hysterical squandering of horses was looked upon by many breeders as a welcome "opening of a world-market" for our horses.

It was in 1902 when the writer had an opportunity to semi-officially investigate this situation, and the result arrived at appeared so serious as to induce him to take up the question of breeding of cavalry horses in the *Breeders' Gazette*, explaining the requirements of such a horse, and advocating government assistance and control over the horse-breeding operations. Some breeders, and a few army officers, seconded the recommendation, but the great majority of both parties still maintained that such a move would be a paternalism distasteful to our people and unnecessary, because our country was well able to produce the best cavalry horse in the world in any number desired. They could not see that a calamity was at our door, and that it was yet time to avert it by ordinary foresight and preventive action.

Nothing much was heard of the subject until about four years ago the war department suddenly discovered that cavalry horses could no longer be procured by the contract system of purchase, then in vogue. The quartermaster general of the army became alarmed and came to the conclusion that the establishment of an Army Remount Department would best serve as a solution of the problem confronting him. He studied the foreign arrangements in this line and worked out a plan that delighted the hearts of the army veterinarians, providing, as it did, for one chief veterinarian at the general remount office, and numerous other veterinary inspectors and assistants to serve at the remount stations. But the war department, and particularly Congress, considered this plan too elaborate, cut it hither and thither, and all that came out of it was the establishment of three remount depots in 1908, each in charge of a cavalry officer, assisted by a contract veterinarian. The latter was not required to give proof of his special qualification for such a place, for which leniency he was left in a position without official standing or adequate emoluments.

It is now generally concluded by army officers and veterina-

rians that in spite of this rudimentary system inaugurated it has proved its great superiority over the previous contract system of purchase of army horses, mainly because the middleman in the deal was eliminated, the purchase being made directly from the breeder. While unserviceable horses still come into the ranks, on the whole the remounts secured in this way are of a better class, better in comparison to remounts formerly offered and accepted, but still far below the standard set by those armies and countries where a typical cavalry horse is being bred for the purpose.

It required only a few years of existence and work of our remount depots to demonstrate that suitable horses can only be bought under any system, if they are produced. That the production of these horses had practically ceased, was the next discovery. The breeders generally, with few exceptions, were not seriously interested in a matter that concerned mainly the war department, and the latter was forced to seek the good offices of the agricultural department to help them out of the quandary, as more in touch with the horse breeders.

Anyone who has followed the birth and development of this move of the war department towards the department of agriculture cannot help but admit with pleasure that the problem was nicely met with in conception. Dr. Melvin and Mr. Rommel of this department proved themselves equal to the new task before them. They worked out a plan of government control of the breeding of army horses that is quite in harmony with the conditions in this country, and they put it into practical working order. While the results likely to be attained appear yet as doubtful to many army officers who detest any idea or practice imported from abroad, it will all work out well towards the end, if only great mistakes are avoided.

Such great mistakes have been made by all foreign governments in the beginning and early development of their horse-breeding operations. They were always followed by dire results, stretching over longer or shorter periods of time. One cannot study the history of such government studs as those of Trakehnen in Germany, of Mezőhegyes in Austria-Hungary, even of the less military and more civil administration of the British breeding studs in India, without being impressed with the waste of time expended in unfruitful clashes of opinion on theories of breeding, of wanton experiments in mixing breeds, and, not the least, in the stubborn attempts of horse fanciers possessed of fantastic ideas of breeding, to keep themselves in lucrative offices. In all of these countries the veterinarian has finally

won out, not because he could muster official or social influence, but on merit only. We may well hope and pray to be spared similar experience in this new government undertaking of our own; but if we should go the same way as the others did, let us prepare ourselves to win, for the better that we can do to our country.

Let us study the matter thoroughly and discuss it frankly in all directions, and then let us branch out into the forefront. So far, we in the army at least, have been overlooked in the co-operation in this new breeding scheme of the government, and others, by virtue of their rank, have been chosen as counselors. This could be expected to be the condition at the start, because it is exactly what happened abroad, only longer ago. But the future must find us forging ahead, must prove our better knowledge, show our calmer judgment, and demonstrate our greater practical skill, if you wish.

It is pleasant to chronicle that already notice has been taken of the valuable assistance the veterinarian can render in breeding problems, at present only from mere private sources. Aside from Dr. Melvin's excellent official publications on breeding of army horses, hunters, etc., during the past few years, the appearance of such articles as that of Dr. Nockald's, First Cavalry, on "Notes on the Progenitors of Certain Strains of the Modern American Horse," published in the *Cavalry Journal*, as also those of Dr. Griffin, Third Artillery, and Dr. D. Arthur Hughes on the remount question, and several briefer notes made by other army veterinarians, have been favorably commented upon by interested army officers. That also an official representation of veterinarians is bound to be acknowledged can be judged by a recent remark of an army officer in the *Cavalry Journal* who, taking occasion to scold our national government for not sooner enacting a breeding strain in this country, said with emphasis: "It remained for an obscure veterinarian in Wisconsin to quietly force through the legislature of his state the first stallion law in America." While none of us will admit that our esteemed colleague, Dr. Alexander, occupies an obscure position, this adjective may be pardoned when we adjust our eyes to the spectacles through which this writer looked at the question.

There is, then, much to encourage us, even in the face of the many obstacles which we shall have to overcome, to conquer a new field of work. It is ours by right, but as we have not claimed it particularly, it has practically been taken possession of by amateurs, from whom we shall have to wrestle it. There is no need

of a third party in the realm of horse-breeding; the farmer-breeder and the veterinarian can conscientiously do all the work inherent to it by nature and demanded by our present day civilization.

(To be continued.)

ARMY VETERINARY DEPARTMENT.

The fate of the Army Veterinary Bill before Congress will be decided in the latter part of July or early in August. At this writing the bill has not been passed by the House of Representatives, but it is hoped by Chairman Hoskins that it will come to a vote on July 15 or 22. It will need an extraordinary strong effort and endurance to get the bill considered in the Senate before adjournment, but it is Dr. Hoskins' firm intention to let no stone unturned to push the bill through during this session of Congress, which is the ardent wish of the army veterinarians. We trust and hope that he and his associates will succeed in their labors in behalf of an improved army veterinary service.

O. S.

OBITUARY.

JOHN BENNETT, V. M. D.

Dr. John Bennett, Tyrone, Blair County, Pennsylvania, died July 2 last in his fifty-first year. Dr. Bennett was born in Johnsville, Bucks County, Pa., in 1862, and spent the early part of his life at that place, receiving his earlier education in a private school in Hatboro of the same county. He studied medicine at Bellevue Medical College, New York City, and veterinary medicine at the Veterinary School of the University of Pennsylvania, graduating with the first class from that school. Born of Quaker parentage, Dr. Bennett was himself a strict Quaker, and was held in high esteem by his townsmen in Ambler and Tyrone, where he practiced, for his manly and gentlemanly principles. He was a Free Mason. The whole veterinary profession, not only of Pennsylvania, but of America, extends its sympathy to the sorrowing widow that survives him.

CORRESPONDENCE.

BRANKSMARE, BARBADOS, WEST INDIES, June 16, 1912.

To Editor of AMERICAN VETERINARY REVIEW:

SIR—The inclosed photo is of a pea hen, which has for some reason assumed the plumage of a male bird, after doing which she is unable to spread her tail.

This peculiar bird is the property of Mr. Douglas Carter, a merchant of this city.



The above pea hen has been in my possession for about ten years, and assumed the plumage of a cock about three years ago.

D. H. R. CARTER.

Mr. Carter tells me that she has often laid, but her eggs never hatched. She was for some years quite satisfied with the usual appearance of a hen, but owing to some freak, she developed her present appearance.

Is there a suffragette microbe by which she could have been inoculated?

Hoping you will find this of sufficient interest for a place in your valuable periodical,

I am yours,

R. A. STOUTE,
Government Veterinary Surgeon.

SOCIETY MEETINGS.

COLORADO VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of this association was held in the buildings of the Division of Veterinary Medicine, Colorado Agricultural College, Ft. Collins, Colo., May 31 and June 1, 1912.

This meeting was considered to be the best meeting in the history of the association. About 40 veterinarians and 50 students of veterinary medicine were present. There were also many of the ladies of the veterinarians present.

THE BUSINESS MEETING.

The address of welcome was given by Mr. Fred P. Stow on behalf of the Mayor of the city. Address of welcome to the college was given by Dean S. Arthur Johnson. Response to these addresses was made on behalf of the association by Dr. Geo. W. Dickey.

The minutes of the previous meeting were read and approved.

It was moved, seconded and carried that the president appoint a committee to define the terms used in the State Stallion Law.

The following committee was appointed: Dr. I. E. Newsom, chairman; Dr. Geo. W. Dickey, Dr. R. H. Bird.

The following is the report of the committee:

Spavin shall be understood to mean bone spavin only.

Ringbone shall be understood as any bony enlargement involving the joints of the limb below the fetlock.

Roaring shall be understood to mean a loud and unnatural sound caused by paralysis of one or more muscles of the larynx.

Periodic ophthalmia shall be understood to mean an acute periodic inflammation of the internal structures of the eye, resulting finally in blindness.

Venereal diseases shall be understood as meaning dourine, coital exanthema or any other contagious or infectious disease of the generative organs communicable to the female.

The report was adopted after much discussion and particularly a lively one on the subject of spavin. The secretary was instructed to send copies of this report to each member of the association, to the secretary of the Stock Inspection Board.

It was moved, seconded and carried that the president appoint a committee to investigate the feasibility of the members of the association carrying an advertisement in the *Record Stockman*, indicating that they are graduates and authorized to inspect stallions and jacks for licenses under the State Stallion and Jack Law.

The following committee was appointed: Dr. A. W. Whitehouse, chairman; Dr. T. F. Quinn, Dr. C. G. Lamb.

The following is the report of the committee:

It is decided to recommend to this association that the time is not yet ripe to carry the advertisement in the *Record Stockman*.

The report was adopted.

The question of charge for expenses in addition to the charge of \$3 allowed by law was discussed. Mr. Fred P. Johnson, secretary of the State Stock Growers' Association, stated that it was intended by the framers of the bill that the charge of \$3 be made for the examination and additional charge for the expense the practitioner was put to in reaching the stud.

Mr. Johnson suggested that the association should become a member of the State Stock Growers' Association. This association is a strong organization in the state and is in a position to greatly aid the veterinarians in securing various needed legislation.

It was moved, seconded and carried that this association make application to become a member of the State Stock Growers' Association.

It was moved, seconded and carried that we recommend to the Stock Growers' Association that they have the stallion and jack law so amended that the licenses expire December 31. This has its advantages, both to the horse and jack owner, as well as to the veterinarian.

It was moved, seconded and carried that a committee be appointed to draw up resolutions relating to the appointment of competent veterinarians to the positions of food inspector and meat inspector.

The following committee was appointed: Dr. Geo. H. Glover, chairman; Dr. Chas. G. Lamb, Dr. V. J. Ayres.

The following is the committee's report:

Whereas, It has come to the knowledge of this association that incompetent men, because of lack of professional training, have for political and other reasons, been appointed to position as milk inspectors, meat inspectors and in other lines calculated to guard the animal wealth and public health, and

Whereas, It has come to our knowledge that several unqualified men are now applicants for positions of dairy and meat inspectors in Denver, and that unqualified men have recently been appointed to similar positions in the state of Colorado, and

Whereas, The State of Colorado is spending much money in educating men at the State Agricultural College especially for this work, and there are many qualified men in the state who are available for these positions, therefore be it

Resolved, That we hereby protest against such practice and respectfully request that in the interests of the public health and fairness to the veterinary profession, that only men be appointed to positions requiring a knowledge of veterinary sanitary science as can qualify professionally. Signed:

GEO. H. GLOVER,

CHAS. G. LAMB,

V. J. AYRES.

The report was adopted and the secretary was instructed to send a copy to Mayor-elect Arnold of Denver and to the veterinarians of the state to be supplied to their local papers for publication.

(Note.—This was done and the result in Denver was that three graduate veterinarians were appointed.)

A letter announcing the marriage of Dr. A. G. Brocker was read by the secretary.

It was moved, seconded and carried that we send a letter of congratulations to the doctor.

A vote of thanks was extended to Mr. Fred P. Johnson for his presence and talk upon the stallion and jack law.

The following names were added to the membership roll: Dr. Ira Watts, Longmont; Dr. I. W. Barstow, Brighton; Dr. T. H. Brady, Lamar; Dr. W. G. Blake, Johnstown.

Dr. A. W. Whitehouse reported favorable progress with the Azoturia investigation started in conjunction with the Veterinary Section of the State Experiment Station.

Dr. Geo. H. Glover made a report of the army legislation committee. All the members of the state are trying to stimulate a furtherance of the army bill now before congress.

Dr. Glover reported that at a meeting of the State Association for the Control of Tuberculosis he, as chairman of a committee on tuberculosis legislation, had outlined a plan which incorporated the following:

The compulsory testing of all cattle for dairy and breeding purposes.

Tuberculous cattle be handled by the Bang system.

All milk from reacting cows must be pasteurized and sold as pasteurized milk from tuberculous cattle.

Competent supervision of the pasteurizing.

The doctor stated that while this was not as stringent as we might hope, yet all dairymen of the State Dairymen's Association he had talked with would work for the bill. It was believed that it would be better to have their co-operation than their violent opposition and to trust to future amendments after taking the first step. * * *

The subject of prosecuting "quacks" practicing in the state illegally was discussed and the statement made by Dr. Geo. W. Dickey, president of the examining board, that there would be three prosecutions started soon.

THE PAPERS.

Our Stallion and Jack Law was discussed by Mr. Fred P. Johnson, secretary of the Western Live Stock Show and of the Colorado Stock Growers' Association.

Pneumonia as a Result of Smoke-Inhalations was discussed by Dr. Geo. W. Dickey. The doctor reported good results by the use of oxygen in these aggravated cases.

A report of *A Peculiar Disease Among Cattle* was given by Dr. I. W. Barstow.

Castration of Ridglings was given by Dr. A. B. McCapes.*

Monstrosities was discussed by Dr. A. G. Wadleigh.

A visit was made to the College Pathology Museum, where there are over 600 pathology specimens.

Some new instruments (home-made) were demonstrated by Dr. A. A. Hermann.

The following are some interesting items in connection with the doctor's talk:

"I have the honor and pleasure of exhibiting and demonstrating a few crude 'implements' of my own workmanship for use in the pursuit of veterinary science by practitioners like myself who are pinched for coin and need to use ingenuity in making an article which, though clumsy, will serve the purpose of some needy though otherwise expensive appliance. The articles shown are not for sale, nor can I in any way duplicate them for you. My purpose is merely to give you an idea which you may use if you choose to do so, or necessity drives you to making of some sorely needed weapon such as this. Necessity is the mother of

*Appears on page 575 of this issue of the REVIEW.

invention, so I lay claim to no talent except such as you all possess. Thoroughly studying the case at hand and devising some appliance, simple, safe and strong, to aid you, is the best plan and only rule you need.

"The first is a poultice boot (Fig. 1-a, also Fig. 3-a), light, weighing only 12 ounces, durable, the sole being of one-half-inch elk sole leather, hand-sewed and water-proof 20-ounce canvas upper, with all seams waxed. It is sanitary and can be washed at liberty. It is neat, shapes itself to the foot and leg and laces tightly around the leg as a high topped shoe does on a person. The demand for these, in my practice, has been such that I have made all sizes, using as patterns, horseshoes in sizes from 1 to 7. As an accommodating cobbler allowed me to do the sewing, these boots cost me less than 50 cents apiece.

"My next instrument is a steel cast made in halves which were successfully applied to the broken leg of an aged Holstein bull weighing 1,500 pounds (Fig. 1-b, also Fig. 3-b). The fracture involved three of the bones of the knee joint and the large metacarpal bone at about its upper third. The stock was 3-32-inch bessemer sheet steel picked up in a junk pile. After being cut the margins were all beveled and the entire surface perforated like a sieve to permit ventilation. The larger front piece was bulged outward near the top and shaped to accommodate the bulk of the knee. The broken bones were replaced as well as possible, the leg was bound in cotton over which strips of canvas were wound. The cast was then applied and firmly fixed and tightened by strong straps. Subsequent swelling held all fractured bones firmly in place for 28 days. By that time union seemed complete. The bull has been used steadily for service since this treatment.

"The hernia clamp here needs no further comment, as a detailed report of same was printed in an earlier number of the AMERICAN VETERINARY REVIEW, Figure 1-c, also Figure 2-c.

"Sometimes an article offered to the profession by manufacturers is unsuitable or fails to do the service required. Such was my experience with a dental punch which was too heavy, too softly tempered and persistently slipped off the tooth, because its serrated surface was convex instead of flat or concave. For less than the punch cost me I procured a length of drill steel, five-eighths-inch stock, and had made tempered to order a set consisting of one each of bayonet punch (Fig. 2-a), straight punch (Fig. 2-b), straight chisel and angular chisel which serves admirably as a molar separator and elevator. Figure 2-d and c included herein is a regular blacksmith scratch awl I made while

studying forge work, which serves admirably as a probe in my dentistry work.

"This ungainly contrivance is a rectal syringe. See Figure 1-f. I can say in its favor that I did not lose any case of alfalfa impaction this fall and winter and I used the syringe on several cases. Two pieces of brass tubing, one seven-eighth and the enclosed one of half-inch stock; a three-way valve and hose connection; Figure 1-g, an eighth-inch rubber ball with burrs and washers made to fit the pipes, comprise the outfit. Figure 1-h. The ball while collapsible is inserted in the rectum; is filled tightly

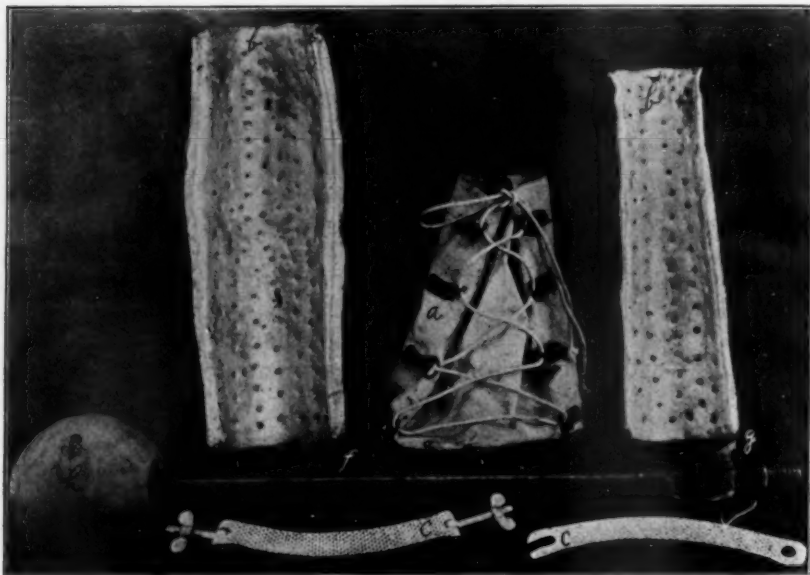


Figure 1. a—Poultice boot. b—Steel cast for fractures. c—Hernial clamps.

with water, after which a turn of the stop cock (g) allows the water to dilate the bowel anterior to the plug. Thus the bowel is dilated from an impacted mass usually lodged in the floating colon (in cases of alfalfa impaction as we have them), and soon the mass is softened and moved by some alkaloidal intestinal evacuant. Later I hope to add a very sensitive pressure gauge to this tip to determine the pressure exerted upon the bowel wall and content, during the patient's straining. By watching the gauge any danger of dilating a bowel beyond its capacity would be eliminated.

"Last but not least, surely not in usefulness and adaptability to all sizes and conditions of horses, is a set of slings (Fig. 3). They are made of canvass belting given gratis by a local miller. The triangles of iron $\frac{3}{8}$ -inch stock pass through pieces of water pipe reinforced with leather tips well sewed (Fig. 3-c). The cost of material was \$9.50 complete with single tree, steel blocks and 50 feet of 4-ply hard twist lariat rope. Horses and cows are supported with equal facility and comfort. Colts are accommodated as easily as heavy draft horses. Being in three separate pieces it is easy to apply to an animal in any position. The main supporting band is only ten inches wide, but has never yet produced any chafing or discomfort (Fig. 3-d), as this part rests upon the sternum peristalsis and respiration is not in the least

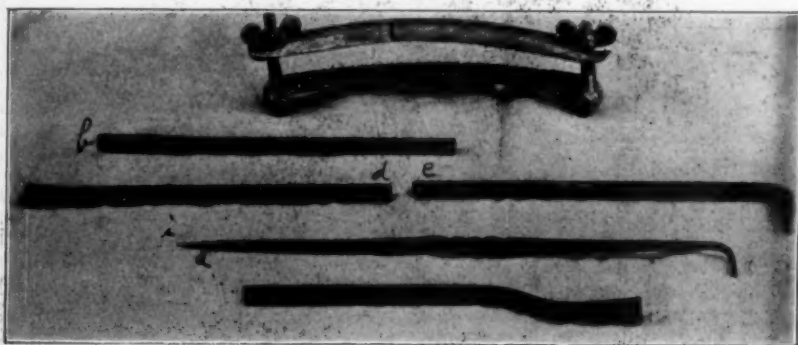


Figure 2. a—Bayonet punch. b—Straight punch. c—Hernia clamp. d—Straight chisel. e—Angular chisel. i—Scratch awl.

hampered. A horse may be raised and held in mid-air for a time without discomfort, or it may be reclined as a dog on its haunches with perfect safety and ease.

THE CLINIC.

Case No. 1.—Mare, roan, 2 years old. Diagnosis: Congenital umbilical hernia. Symptoms: A soft reducible swelling at the umbilicus, about the size of a goose egg. Operator: W. A. Kickland, M. D. General technique: Perfect asepsis was obtained by sterile sheets, sponges, gloves and instruments. Tincture of iodine was used to disinfect the area. Dr. Mayo's method of operating was followed. This is the second case that has been successfully operated upon by the same method in Dr. Kingman's operating room. The operation will be described when sufficient number of cases have been operated upon to assure its practicability.

Case No. 2. Horse, roan, 2 years old. Diagnosis: Monorchid. Operator: Dr. A. B. McCapes.

Dr. McCapes follows a technique that he has developed after a great many years' experience in this kind of work. It is described for the first time in his paper presented at this meeting.*

Case No. 3. Horse, male hermaphrodite, 3 years old.

As Figure 4-a shows there is a well developed penis which protrudes more than a foot when erection is present. This penis

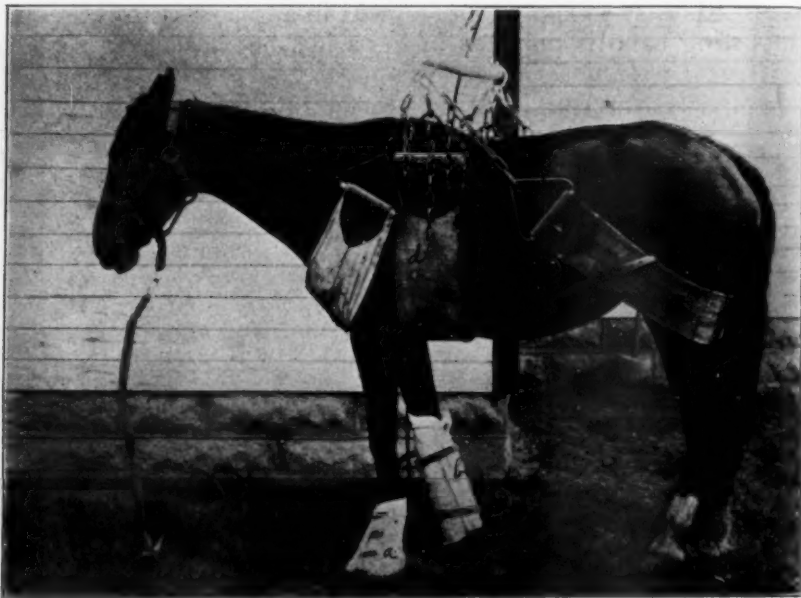


Figure 3. a—Poultice boot applied. b—Steel cast for fracture applied.
c—Triangles. d—Main supporting piece.

is located below the anus or place where the vulvar opening should be. On the raphæ there is a heavy fold of skin, but there was no opening as in a vulva. Two poorly developed testicles were found in the usual place. The mammary glands were fairly well developed.

Case No. 4. Horse, brown, 14 years old. Diagnosis: Monorchid. Operation: Castration.

Operator: Dr. A. W. Whitehouse. The technique is described in the *AMERICAN VETERINARY REVIEW* of January, 1911.

* Published on page 577 of this issue of the *REVIEW*.

Horse was given bacterial vaccine, to raise his opsonic index against bacterial invasion, of the pus-producing kind, previous to operation. Chloroform was used as an anesthetic.

Case No. 5. Horse, brown, 6 years old. Diagnosis: Occult side bon.

Symptoms: Supporting leg lameness in right fore leg. Sensitiveness over both lateral cartilages. No enlargement or hardness. Treatment: digital neurectomy recommended.



Figure 4. a—Penis. Case No. 3.

Case No. 6. Horse, bay, 8 years old. Diagnosis: Stringhalt. Treatment: Tenotomy of lateral digital extensor. Operator: Dr. P. H. Cottrell.

Case No. 7. Horse, gelding, sorrel, 6 years old. Diagnosis: Chronic thickening of the right ramus of the mandible over the roots of the first and second molars.

Symptoms: Enlargement the size of a man's fist, not sensitive, of two months' standing. Second tooth higher than the others,

but evidently sound. There was a difference of opinion among the practitioners in regard to the treatment. It was thought best to pull the tooth, but when it was found that the tooth was firm and not sensitive the cutters were used in place of extraction. The case will be reported on later.

Case No. 8. Mare, gray, 8 years old. Symptoms: Contraction of brachial and antibrachial fasciæ. See Figure 5. The extensor tendons stood out very tense and rigid. The leg was held in a very stiff and peculiar position.



Figure 5. Case No 8.

History: Two years' standing. The strip from the brachial fascia which attaches to the tendon of the biceps was severed with partial relief of the condition. No further treatment was attempted.

Case No. 9. Gelding, bay, 2 years old. Diagnosis: Wire cut over knee. Three months' standing. Treatment: A paste made from zinc oxid, zinc sulphate and lead acetate.

This paste is usually excellent in these cases, but this wound has become a sluggish sore from neglect before being brought to

the hospital. Not doing well on this treatment; after due trial a 1 per cent. Sudan III. in vaseline was later tried and is now being rapidly covered over with epithelium. Many of the dyes have given good results in human practice in indolent wounds. These are Scarlet R, Sudan I., Sudan IV., Sudan G. and others. They deserve further trial.

Figure 6-A illustrates this condition.

Case No. 10. Horse, black, 7 years old. Diagnosis: Influenza.

History: Came in a distance of 40 miles and was taken ill soon after arrival. When first seen at the hospital he had a tempera-



Figure 6. a—The wound. Case No. 9.

ture of 104 degrees Fahrenheit, pulse weak and 50 per minute. Respiration 25 per minute. Conjunctiva very red and everted. Opacity of the cornea of both eyes, sheath and scrotum edematous, legs also infiltrated.

Had been in hospital one week at time of meeting, isolated from other animals and stall locked.

Treatment: Aloes ball, tincture strophanthus one dram, strychnine sulph. one-half grain three times a day. Sheath and scrotum placed in a support and irrigated with warm water. Legs rubbed and bandaged and animal given green feed and walked a

short distance every half day. 1.2000 solution of bi-cyanide of mercury was used as an eye wash several times a day with gratifying results. In three days the corneas cleared to almost normal and the conjunctivæ were free from inflammation.

The horse was dismissed at the end of the meeting.

THE ENTERTAINMENT.

Automobiles met the train at the college station on the first day of the meeting. A visit was made to the U. S. breeding stud to observe the new type of American carriage horse which the government and state are perfecting.

After a ride around the city a luncheon was served at the Northern Hotel.

The veterinary banquet and ball of the Division of Veterinary Medicine of the college was given in the evening of the first day. One hundred and five were present. The members of the state association were guests of the local association.

The visiting ladies were given an auto ride the forenoon of the second day and joined the members at luncheon at the Pathology building at 12 o'clock.

In the afternoon a visit of the campus and buildings was made.

PRESIDENT'S ADDRESS.

Gentlemen: I know that there are members of this association that have more executive ability and could fill this position better than myself, but you have elected me to fill this position and I trust you will give me your hearty support and co-operation and with it I will try and do my best.

This is my first attempt as a presiding officer and I hope you will excuse my many mistakes. In deciding on a subject for this address I was at a loss to select any subject of much importance to the profession, but decided to give a brief history of our association.

While this association is still in its infancy, its accomplishments will show that its members have not been idle all the time, and its members have always been willing to put a shoulder to the wheel and push it along. As an illustration, we have purchased a machine, I say purchased, because, sorry to say, you cannot get any kind of legislation without some remuneration. In other words, we have struggled along until we have a law on the statute books of Colorado that will be a great benefit to ourselves and general public. And it looks like it would stand the test. Now

it is up to the association to enforce it if we expect to realize anything for our efforts.

Our first attempt towards the betterment of our legal conditions was started in 1902-3 when, through the persistent efforts of some of our members, especially Dr. A. B. McCapes, then state veterinarian, we got a law enacted by the general assembly.

While like all inventions there is ever a chance for improvement, so it was with our law governing veterinary medicine.

After it had gone through the mill it did not amount to very much, but it was an incentive to every member of this association to get busy and try and improve it.

On July 15, 1903, this association was organized, with 17 charter members, at the state capitol.

We have 12 of these members enrolled at the present time. Two have gone to the great beyond and three have left the state.

In 1904-5 we were suddenly surprised to find that the non-graduates had started a movement to tear down our little foundation and set back beyond where we started from, but this was met with a determination that we would not be repulsed and we came out victorious.

While this first enactment would not stand the test, it had its effect in starting the public to an understanding what class doctor so and so belonged and the quacks began to lose prestige.

Again in 1906-07 we were fortunate enough to get a law enacted that looked like it would stand the test, but after the race we again found our machinery weak in places and needed some repairs, which have since been made, and now we think that we have a law that will stand the severest test.

We have been victorious in all our combats so far and have gained a fair foothold; now it is up to each and every one of us to put forth every effort to enforce our law, governing the practice of veterinary medicine, and to educate the live stock raisers and owners that it is to their interest to seek the assistance of a man that has a special training in the care and treatment of our dumb animals—our friends—in both health and disease, and not to employ "doc" so and so, whose stock in trade is hot air and sure cure for water colic.

Our membership is about 40, some of which are very active in promoting the welfare of the association and have its interest at heart.

There are several new veterinarians that have entered the state and we hope that they will all become members of this association, as we need representation from all parts of the state.

While our membership is increasing it is not the policy for any one of us to think that some one else can do the work, but it behooves each of us to get busy and see that some prosecutions are started and the results noted, and if there is still a flaw in our machinery, we can get it repaired in the coming legislature, and if it is sound, then every violator, whether he be a graduate or non-graduate, should be made to stand the consequences.

B. F. KAUPP, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The twenty-eighth semi-annual meeting of the Veterinary Medical Association of New Jersey was held at Jersey City July 11, 1912.

The morning was given over to clinic. President T. E. Smith provided an excellent place and the local committee had gathered an abundance of material. Among the operations were quitor operation, castrations, tenotomy, fistulus withers operation, operation for cysts and neurectomy. A number of obscure cases were presented for diagnosis and altogether the clinic was a decided success.

Dinner was served at the Columbian Club, after which Mayor Otto Wittpenn of Jersey City gave the address of welcome.

A short business session was then held.

Four new members were elected: Drs. S. W. Schuppan of Freehold, Chas. C. Schloemer of Hoboken, T. F. O'Dea of Union and Wm. A. Fitzpatrick of Burlington.

The following resolution was adopted:

"Resolved, That the Veterinary Medical Association of New Jersey commends the work of the Bureau of Animal Industry and has full confidence in the manner it is being carried out."

It was arranged to hold a half-day meeting in the fall, at which time there will be an open discussion as to what new legislation towards better public health laws will be supported by the association. The laws as to tuberculosis and other contagious diseases of animals will receive particular attention.

President T. E. Smith was presented with a handsome cane and umbrella as a token of esteem from the Hudson County Practitioners' Club. The presentation was made by Dr. Rufus R. Ramsey.

The literary program was of a very high order and received excellent comment from both members and visitors. Supper was

served at the club house and the literary program was finally completed at 10.30 p. m.

The papers were as follows:

1. "The Veterinarian in Relation to Public Health," by Dr. P. K. Nichols of Staten Island. This paper was an excellent one and a long discussion followed it.
2. "The Relation of the Veterinarian to the Public," by Dr. Harold E. Stearns, Arlington, N. J.
3. "Stumbling," by Dr. James McDonnough, Montclair, N. J.
4. "Principles of Horseshoeing," by Dr. David W. Cochran, New York.
5. "Autotherapy or Curing Disease with Its Own Poisons" by Dr. Chas. H. Duncan, New York.
6. "Diseases of Wild Animals in Confinement" (with lantern slides showing specimens), by Dr. W. Reid Blair, New York.

The following members were present: Drs. Belloff, Gall, McCarter, Loubach, Ramsey, Lindsey, Holdenby, R. E. Mosedale, James Mosedale, Harkes, J. T. Glennon, Hurley, J. Payne Lowe, Harrison, Gray, McDonnough, J. B. Hopper, A. G. Hopper, Stearns, Schloemer, O'Dea, Shuppen, Fitzpatrick, Paulin E. Matthews, Hendren, J. Mitchell, Dustin, Bair, Halliday, A. W. Smith, R. Dixon, Budd, Geo. W. Smith, T. E. Smith and Loblein.

Visitors: Dr. Runyon of Stelton, N. J., Millenberger of Philadelphia, Drs. Ellis, DeVine, Mangen, Cochran, Gill, McLaughlin, Fitch and W. Reid Blair of New York City, Drs. Ackerman and Fitch of Brooklyn, Dr. P. K. Nichols of Staten Island, Drs. Miller and Bruce Blair of Jersey City and Dr. Hossman of Hoboken and Mayor Otto Wittpenn of Jersey City.

E. L. LOBLEIN, Secretary.

CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION.

The third annual meeting of this association was held at the Vanderbilt Hotel, Syracuse, N. Y., on June 27, 1912, with the following members present: W. G. Hollingworth, H. A. Turner, W. B. Switzer, F. E. York, J. A. Pendergast, J. M. Currie, L. G. Moore, D. C. Papworth, J. S. Elliott, E. E. Cole, A. J. Tuxill, E. E. Dooling, Wilson Huff, George Gowland, Frank Morrow, A.

E. Merry, W. S. Corlis, W. M. Pendergast, E. D. Hayden, C. R. Baldwin, R. M. Weightman, J. C. Stevens, J. H. Stack, I. L. Buchanan, Earl W. Fitch, George D. Burton. Applications for membership were presented by Henry Cady, of Gloversville, and Wm. E. J. Evans, both being duly admitted. The association had as its guests Dr. Frank J. Loomis, meat and milk inspector of Watertown, N. Y.; Dr. A. George Tegg, of the Genesee Valley Veterinary Medical Society, Rochester, N. Y.; Mr. F. J. Switzer and Mr. C. Russell Guile, of Fulton, N. Y.

The prosecuting committee appointed at the last meeting for the purpose of working against the illegal practice of the profession reported progress. Mr. Merritt A. Switzer, of Oswego, N. Y., attorney for the association, was present and outlined the work done during the past year. Several illegal practitioners have already been forced to desist and active measures were authorized for the coming year to the end that the work may be carried on very much more effectively during the coming year. The prosecuting committee appointed at the last meeting was continued in office.

The matter of the proper and scientific inspection of meat and milk and of the conditions under which they are handled was discussed at considerable length. Our guest, Dr. Loomis, gave a very interesting talk on the methods used in his work, which was supplemented by Dr. Tegg, of Rochester, by Dr. Dooling, Dr. Huff and others. It was the unanimous vote of the members present that this society be placed on record as favoring a much more general and thorough inspection along these lines.

Dr. W. S. Corlis spoke very interestingly on "Hog Cholera" and from his experience in these matters answered many questions in the discussion which followed. Another instructive paper was read by Dr. I. L. Buchanan on "Gastric Indigestion." The president's address, delivered by Dr. Hollingworth, was extremely helpful.

The officers elected for the ensuing year were, as follows: President, Dr. Jas. A. Pendergast; Vice-President, Dr. R. M. Weightman; Secretary-Treasurer, Dr. W. B. Switzer; Board of Censors, Dr. E. E. Dooling, Dr. I. L. Buchanan, Dr. Frank Morrow, Dr. L. G. Moore, Dr. J. M. Currie and Dr. J. S. Elliott.

As a preliminary to the meeting a clinic was held at the infirmary of Dr. H. A. Turner, 812 South Salina Street, Syracuse. Dr. Hollingworth, president of the association, assisted by Dr. W. S. Corlis and others, operated on the following cases, among

others: Quittor, median neurectomy for ring-bone, sciatic neurectomy for spavin, and two cases of fistulous withers. The success of this feature is due largely to the efforts of Dr. Turner in securing the cases and to his courtesy in welcoming the members to his well-appointed infirmary. This was the first instance of the use of the clinic by this association, and the result was very satisfactory in point of interest and in general helpfulness and sociability.

Lunch was served during the course of the clinic at the infirmary of Dr. Turner. Following the close of the meeting the members set down to an enjoyable banquet at the Vanderbilt Hotel.

This meeting of the association proved to be the best yet held and fully justified the efforts of its officers and members in arranging to meet thus in consultation and mutual service. With the growth in numbers and with the experience of years, even greater things are to be expected for the future.

W. B. SWITZER, Secretary.

LAST WORD FROM SECRETARY MARSHALL: "I believe we are going to have an unusually good meeting."

FOURTEEN veterinarians from New York, including the president of the New York State Veterinary Medical Society, were present at the recent congress of New Jersey veterinarians, and took an active part in the programme enacted.

PRESIDENT DE VINE, of the New York State Veterinary Medical Society, received a high tribute from President Smith for what he had been able to do for the profession in New Jersey, as the result of an address made by Dr. De Vine before a joint meeting of the State Agricultural Society and the Tuberculosis Commission at the New Jersey capital last winter.

NOT CROWDING OUT HORSES, HARNESS MAN SAYS.—The horse is not being replaced by the automobile, said Charles Schell, president of the National Harness Manufacturers' Association, in opening the twenty-sixth annual convention of the association at the Hotel Victoria.

There are more horses in this country than ever, and they are commanding just as high prices as formerly in the market, according to Mr. Schell. There is just as great a demand for harness, and the manufacturers have sold more harness during the last year than ever before.—(New York Tribune.)

NEWS AND ITEMS.

LAST WORD FROM PRESIDENT BRENTON: "Have just returned late tonight from a trip to the northern part of our state. From present indications we are to have a rousing good meeting and I am hopeful of having a record-breaking attendance."

DR. J. N. SHOEMAKER has accepted the position of house surgeon in the veterinary school of Columbus University, where he will be glad to hear from his friends and former college associates.

GOSHEN FULL OF TROTTERS: Dr. John F. De Vine of Goshen, N. Y., reports that that old trotting horse center is literally filled with trotters, training for the meet there and for the trot at Monroe.

DR. CHAS. H. JEWELL has been transferred from the Sixth Field Artillery to the Fifth Field Artillery, relieved from the mounted service school and stationed at Fort Sill, Okla. Dr. Winfred J. Stokes takes Dr. Jewell's place in the mounted service school.

DR. NELSON BECOMES A BENEDICT: Dr. C. A. Nelson, Brainerd, Minn., was united in marriage to Miss Winnifred Robertson, of St. Cloud, on June 27 last. Dr. Nelson exercised his usual good judgment in his selection of a bride that characterizes his action in other things, and we congratulate both the young people and wish them all the joy and happiness they deserve. We hope Dr. Nelson will start right and bring Mrs. Nelson to the A. V. M. A. convention at Indianapolis this month.

DR. MUNCE GOES ABROAD: Dr. T. E. Munce, Deputy State Veterinarian of Pennsylvania, and Mrs. Munce sailed July 13 for a trip abroad. They will tour the British Isles, France, Belgium, Holland and a portion of Germany.

At Edinburgh, under Professors Leighton and Douglas, special instruction will be taken by Dr. Munce in reference to meat inspection. Investigation will be made concerning the regulations and methods used in France, Holland and Germany where municipal abattoirs and meat inspection have for years been maintained. The knowledge to be gained by these investigations should prove helpful when applied to the Pennsylvania State Meat Hygiene Service.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.	Week Aug. 26, '12	141 W. 54th St. Indianapolis.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.			C. J. Marshall, Philadelphia
Arkansas Veterinary Ass'n.			J. B. Arthur, Russellville.
Ass'n Médéciale Veterinaire Française "Laval"	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.	2d Fri. ea. mo.	Chicago.	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.	3d Mon. ea. mo.	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.		San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.		Ottawa.	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.	June and Nov.	Syracuse.	W. B. Switzer, Oswego.
Chicago Veterinary Society.	2d Tues. ea. mo.	Chicago.	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.	Jan., 1913.	Denver.	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.	Feb. 6, 1912.	Hartford.	B. K. Dow, Willimantic.
Delaware State Vet. Society.	Jan. Apl. Jy. Oct.	Wilmington.	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.			J. H. Taylor, Henrietta.
Georgia State V. M. A.		Atlanta.	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y.	2d Sat. ea. mo.	Wash., D. C.	A. T. Ayers.
Hamilton Co. (Ohio) V. A.			Louis P. Cook, Cincinnati.
Idaho Ass'n of Vet. Graduates.		Boise.	G. E. Noble, Boise.
Illinois State V. M. Ass'n.	July 9, 1912.	Springfield.	L. A. Merillat, Chicago.
Indiana Veterinary Association.	Jan. 15-16, 1913.	Indianapolis.	A. F. Nelson, Lebanon.
Iowa Veterinary Ass'n.			C. H. Stange, Ames.
Kansas State V. M. Ass'n.	January, 1913.	Topeka.	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.	Oct. & Feb. ea. yr.	Lexington.	Robert Graham, Lexington.
Keystone V. M. Ass'n.			E. H. Yunker, Phila.
Lake Erie V. M. Association.	Oct 8-12, 1912.	Lorain, O.	Phil. H. Fulstow, Norwalk, O.
Louisiana State V. M. Ass'n.			E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.	July, 1912.	Portland.	C. W. Watson, Brunswick.
Maryland State Vet. Society.		Baltimore.	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.	4th Wed. ea. mo.	Young's Bost'n.	J. H. Seale, Salem.
Michigan State V. M. Ass'n.	Feb. 6-8, 1912.	Mich. Agr. Col.	Judson Black, Richmond.
Minnesota State V. M. Ass'n.	July 10-11, 1912.	Minneapolis.	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.			Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.			Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n.	July 29-30, 1912.	Marshall.	S. Stewart, Kansas City.
Montana State V. M. A.	Jan. 29-30, 1912.	Bozeman.	A. D. Knowles, Livingston.
Nebraska V. M. Ass'n.	January, 1912.	Lincoln.	W. H. Tuck, Weeping Water.
New York S. V. M. Soc'y.	Jy. 30-31, Aug. 1.	Utica.	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.	June 1912.	Raleigh.	M. J. Ragland, Salisbury.
North Dakota V. M. Ass'n.	Fair Week, 1912.	Fargo.	C. H. Babcock, New Rockford.
North-Western Ohio V. M. A.	Feb. and Nov.	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.			Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.	Annually.	Up'r Sandusky.	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.			I. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.	Dec. 14-15, 1911.	Okl. City.	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.	April, 1912.	Toronto.	C. H. Sweetapple, Toronto.
Pennsylvania State V. M. A.	September, 1912.		John Reichel, Glenolden.
Philippine V. M. A.	Call of President	Manila.	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.		Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.	Jan. and June.	Providence.	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns			Clarence E. Smith, Greenville.
St. Illinois V. M. and Surg. A.	Jan. 2-3, 1912.	Centralia.	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.		
Schuykill Valley V. M. A.	June 19, 1912.	St. Louis.	Wm. T. Conway, St. Louis, Mo.
Soc. Vet. Alumni Univ. Penn.		Reading.	W. G. Huyatt, Wernersville.
South Dakota V. M. A.		Philadelphia.	B. T. Woodward, Wash'n, D. C.
Southern Auxiliary of California State V. M. Ass'n.	2d Tues. July '12	Aberdeen.	S. W. Allen, Watertown.
So. St. Joseph Ass'n of Vet. Insp.			
Tennessee Vet. Med. Ass'n.	Jan. Apl. Jy. Oct.	Los Angeles.	J. A. Dell, Los Angeles.
Texas V. M. Ass'n.	4th Tues. ea. mo.	407 Ill. Ave.	H. R. Collins, So. St. Joseph.
Twin City V. M. Ass'n.			A. C. Topmiller, Murfreesboro.
Utah Vet. Med. Ass'n.	Mar. 18 19, 1912.	Fort Worth.	R. P. Masteller, College Sta.
Vermont Vet. Med. Ass'n.	2d Thu. ea. mo.	St. P.-Minneap.	S. H. Ward, St. Paul, Minn.
Veterinary Ass'n of Alberta.	Mar., 1912.	Logan.	A. J. Webb, Layton.
Vet. Ass'n Dist. of Columbia.			G. T. Stevenson, Burlington.
	3d Wed. ea. mo.		C. H. H. Sweetapple, For.
		514-9th St., N. W.	Saskatchewan, Alta., Can.
			M. Page Smith, Wash., D. C.
Vet. Ass'n of Manitoba.	Midsummer Fair	Winnipeg.	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.	Jan. 1913.	Jersey City.	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City.	1st Wed. ea. mo.	141 W. 54th St.	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club.	Monthly.	Jersey City.	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n.	July 11, 1912.	Newport News.	Geo. C. Faville, Norfolk.
Washington State Col. V. M. A.	1st & 3d Fri. Eve.	Pullman.	R. J. Donohue, Pullman.
Washington State V. M. A.	Jan. 9-10, 1913.	Wenatchee.	Carl Cozier, Bellingham.
Western Penn. V. M. Ass'n.	2d Thurs. ea. mo.	Pittsburgh.	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.	July, 1912.	Janesville.	J. P. West, Madison.
York Co. (Pa.) V. M. A.	June 4, 1912.	York.	E. S. Bausticker, York, Pa.

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